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FISH PROTEIN CONCENTRATE--A HIGH QUALITY ANIMAL PROTEIN ^{1/}

By E. R. Pariser*

Fish protein concentrate or fish flour--a new high-quality animal protein product--is potentially of economic significance to our fishing industry, political significance to our Nation, and sociological significance to the world. The domestic fishing industry should be given the opportunity to produce a satisfactory low-cost fish protein concentrate meeting general nutritional standards for worldwide use in human diets. Aiding the fishing industry to obtain the know-how and technical knowledge needed to produce this new product is the goal of the research on fish protein concentrate at the College Park Technological Laboratory of the U. S. Bureau of Commercial Fisheries.

Let us examine some of the factors that make this new product so important. Let us also examine what has been done and what is still needed in order to realize the goal of the Bureau's research on fish protein concentrate.

NEED AND VALUE

Hunger is the biggest problem of the century. More than half of the world's total population suffers from lack of food, adequate in quality and quantity to sustain health, growth, and physical vigor. Progress to relieve this condition has largely been offset by the alarming and accelerating rate of population growth. By the year 2000, the population of Asia, Africa, and Latin America will increase by about three billion people--an addition equal to the total world population of today. The task we face is staggering.

Malnutrition, undernutrition, is largely the result of an inadequate consumption of high-quality animal protein which is needed to complete and to balance the diets of peoples of developing nations, diets containing preponderantly vegetables and cereals. Sadly enough, young growing children and expectant mothers suffer most from a lack of proteins containing sufficient quantities and correct proportions of the required amino acids. Milk, eggs, beef, chicken, and the usual fishery products all contain high-quality animal protein, but those products are not universally available or they cost too much.

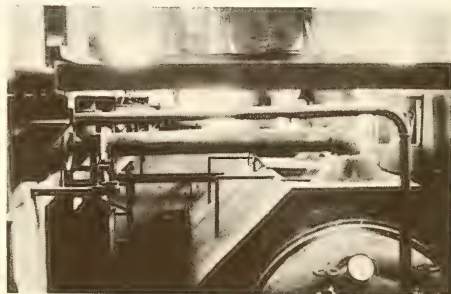


Fig. 1 - Extractor of UNICEF-ISESA experimental fish protein concentrate or fish flour plant in Quintero, Chile.

^{1/}Adapted from an address by Dr. G. M. Knobl, Jr., Assistant Laboratory Director, Technological Laboratory, U. S. Bureau of Commercial Fisheries, College Park, Md.

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Other sources of proteins of high quality must therefore be found--and fast. The fishery resources of the sea are an important source. Wisely managed, the sea with its great population of fish represents a vast reservoir of animal protein, proteins of exceptionally high quality that can be supplied in the form of concentrated fish protein.

The above concepts are by no means new, yet today, fish represents only a minor percentage of the food consumed by human beings. This is the more surprising in view of the fact that more than 70 percent of the surface of this planet is covered by oceans and seas and that, furthermore, the sea is considered by many authorities to be, acre for acre, about as productive as arable land.

Systematic efforts to farm the seas on a rational, industrial scale with a view of producing concentrated protein for human consumption have lagged far behind similar efforts to harvest and utilize the fruits of the land. The time has now come, however, when we can no longer leave this opportunity unchallenged, when old ideas have to be translated into action, and when the pursuit of the production of concentrated fish protein has become an obligation to mankind.

Aside from the purely humanitarian issues, the production of a satisfactory fish protein concentrate would provide much-needed economic stimulation for our domestic fishing industry. Such production would provide the all-important diversification needed by the industrial fisheries segment of our fishing industry--eliminating such market conditions of imbalanced supply and demand as was experienced a short time ago in the fish-reduction industry. The fishing industries of other nations of course would eventually produce fish protein concentrate as well. If 2 years ago Peru had diverted only 100,000 tons of their fish meal production into fish flour to feed their own people, we would never have witnessed--as we did--the collapse of the world market for fish meal.



Fig. 2 - Dehydrated protein concentrate elevators used in UNICEF-ISESA experimental plant in Quintero, Chile.

dock--a protein waste that could feed thousands. In many areas, periods of glut lower the price of the catch, and often no market is available. If however the processors were able to manufacture fish protein concentrates during times of surplus, markets would stabilize and a low-cost protein food for the hungry would be available.

From a biological standpoint, the manufacture of fish protein concentrate would help us realize our goal by achieving efficient utilization of resources compatible with sustained optimum yield. Our fishermen would also be able to reestablish a favorable balance on our fishing grounds between the predatory fish and the grazing types of fish. Many years of selective fishing for the larger species has favored growth of smaller, less desirable kinds of fish until, in many areas, the latter are now relatively overabundant.

POTENTIAL MARKET AND POLITICAL SIGNIFICANCE

A fair market might exist for fish protein concentrate even in the United States--for instance as a supplement to breakfast cereals and baby foods. Cookies, doughnuts, noodles, and similar foods could almost magically be transformed into sources of good-quality protein if properly supplemented with fish protein concentrate--resulting in less parental worry over the starch-consuming teen-ager. From another point of view, our industrial fisheries

alone could supply in one fishing season more than the protein needed by our entire population during a 2-week period of a nuclear emergency.

It was estimated at the recent FAO Conference on Fish in Nutrition that 600 million people receive the major share of global animal protein, whereas 2 billion people, mostly in developing countries, lack this important nutrient. Clearly, 2 billion people represent an immense market--and one ready today.

Obviously, 2 billion people cannot continue to be denied animal protein without the possibility of dire, explosive, and politically obvious consequences^{2/}. The other side of the coin is just as obvious. If adequately fed, these people may turn toward the goal of economic stability that we all seek as a basis for enduring world peace.

RESEARCH ON FISH PROTEIN CONCENTRATE

Although many attempts have been made to develop methods to manufacture fish protein concentrate, none of these efforts have yet met with complete success. Either these methods are still beset with processing problems or they have not been approved in good conscience by nutritionists, pediatricians, FAO, and the like.

Also, with few exceptions, the United States is not conducting, as other nations are, the scientific experimental studies designed to achieve a satisfactory product. For these reasons, Congress appropriated \$50,000 for fiscal year 1962 to the Bureau of Commercial Fisheries for a research project designed to study existing methods, and if necessary, to improve these or to develop new concepts for the manufacture of fish protein concentrates suitable for worldwide incorporation into human diets.



Fig. 3 - Bagged fish protein concentrate in experimental plant at Quintero, Chile.

BUREAU PROGRAM: Our objectives are designed to specify ultimately methods that:

- (1) Require low initial capitalization.
- (2) Are economical in operation.
- (3) Are flexible for both large-scale and small-scale operation.
- (4) Are flexible enough to permit operation in those parts of the world where public utilities are limited.
- (5) Result in the production of an end product that will be acceptable to peoples who may have varying taste preferences, cultures, and taboos.
- (6) Result in the production of an end-product that will be approved as being fully satisfactory and suitable by world-recognized experts in the field of protein supplementation.
- (7) Result in the production of a product that could be cheaply shipped to distant parts and that could be stored for varying periods of time without quality loss, and that could be easily incorporated into the local diets of undernourished peoples.

The project is supported, not only by some members of the United States Congress, and the fishing industry, but is also endorsed and assisted by United Nations Agencies, such as 2/Venter turpissima pars corporis (Sallust)--the stomach is the wickedest part of the body.

the Food and Agriculture Organization, the United Nations International Children's Emergency Fund, and the World Health Organization. It is being conducted with the support and approval of the Food for Peace and of the Freedom from Hunger campaigns and operates in co-operation with the Interdepartmental Committee on Nutrition for National Defense and the National Academy of Sciences Food and Nutrition Board.

The over-all Bureau program, set up for this extended research project, consists of the following three phases:

1 - Comprehensive Survey: To ensure that the funds allocated by Congress to this project will be used in the most effective manner, the Bureau is conducting a general survey of methods, used or studied, for the manufacture of fish protein concentrates for human consumption. Part of this survey, which is still under way, has been completed. Labor, time, and funds spent upon this preliminary work are insignificant compared to the labor, time, and funds that would be required to establish, by independent experiments, the knowledge that will, in this way, be gathered from different sources. On completion of this general survey, a detailed monograph will be prepared for the United States industry. This monograph will constitute a record of scientific data concerning the partial successes and failures of the different attempts to develop a satisfactory manufacturing process.

2 - Formation of an Expert Consultant Group: As the second phase of the program, the Bureau plans to request assembly of a panel of expert consultants who will be presented with the findings in the monograph. The panel members will be asked to examine critically the facts contained in the report in order to be able to assist in the further programming and planning of the Bureau project. Experts from a wide field of scientific disciplines would be asked to participate in this consultant group, the formation of which is considered to be an essential condition for the success of this highly complex project. It is envisaged that the group will meet at least once a year, after the initial assembly, to advise us on our research program. The urgency, magnitude, and significance--both domestic and international--of our aims are ample justifications for calling upon the foremost scientific and technical authorities that this country has to offer. It is, furthermore, realized that before any method can finally be considered as being fully successful and satisfactory, it has to be conscientiously approved by an inter-disciplinary body of scientists such as the Protein Advisory Group of the United Nations. Some of the members of the latter organization will participate in the work of our panel and in this way help to assure the global approval of our work. Failure to work in close cooperation with such a group has proved to be a great handicap in previous trials carried out by private industry.

The survey and, it is hoped, the initial formation of the consultant group is expected to be accomplished in 1962.

3 - Laboratory Development of a Satisfactory Process: With the assistance and advice of the panel of experts just mentioned, the final phase of the research program will be designed either to attempt to improve existing methods, or if indicated, to develop, on a laboratory scale, a new process or processes that when satisfactory will be turned over to the fishing industry for further pilot-plant and commercial development.

Accomplishments: As already indicated, the first part of the general survey has now been completed. During this initial phase, plants in this country, Canada, Central and South America were studied. Although details of these studies will be published in a monograph, let us examine two groups of facts learned--in Canada and in South America--that will indicate the value of this survey approach to our research.

Canada: Scientists at the Technological Station of the Canadian Fisheries Research Board in Halifax have been working for some time now on the problem of fish protein manufacture. At the moment, the Station's research program is directed towards the production of the best fish protein concentrate that can be manufactured, irrespective of cost. Only cod fillets are being used. The Canadian scientists hope to produce a product that might be introduced on the United States market, both for use as a protein fortifier in various food prod-

ucts and in an attempt to compete on the casein and egg albumen markets. We should note that the Canadians believe in a United States market--and they are preparing for it. The careful and scientific manner in which the fish flour program is conducted at Halifax is highly impressive. They are actively striving to produce a product of uniform quality.

South America: Characteristic of the independent and energetic efforts that are being made to develop manufacturing methods is a process developed by Dr. Bertullo, a staff member of the University of Montevideo, Uruguay. During a survey of micro-organisms associated with marine life, Dr. Bertullo isolated a new strain of yeast from a local species of fish. He discovered furthermore that this yeast had proteolytic activity; that is, that it was capable of breaking down proteins into amino acids. Inoculation with this yeast of a mass of comminuted fish, to which a small amount of molasses had been added, leads, within about 72 hours, to the production of a liquid mass. Bones, scales, and so on have disappeared during this process and so has the characteristic fishy odor and taste of the raw material, which is rich in Vitamin B₁₂. The product appears, on the basis of present experience, to have a remarkably long shelf life. It is believed that this type of product may become increasingly important, not only because it lends itself, by a process of spray-drying, to the production of a cheap dehydrated protein (or amino acid) flour, but also because it has, so far, shown itself to be of excellent nutritive value.

CONCLUSION

The successful, large-scale extraction of proteins from the seas for use in the human diet is today the goal of engineers and scientists in many countries--including Soviet Russia. Once successfully developed, the resulting product would constitute the beginning of an entirely new segment of the fishing industry. It will develop as explosively as the growth of the world population. It will rank foremost in importance with but a few other industries, capable of producing a cheap, high-quality food, available to everyone, everywhere. A most vigorous effort should be made for the United States to be in the vanguard on this potential advance in human nutrition.



SEAWEED CHEMICAL DERIVATIVE AS SUBSTITUTE FOR BLOOD PLASMA

Researchers for years have been looking for a plentiful substance which can be substituted for whole blood or blood plasma in the giving of emergency transfusions to disaster or accident victims. A new discovery is a chemical derived from the tiny cells of giant brown seaweed.

This whole blood substitute was reported by two Japanese surgeons of the Kyushu University Medical School in Fukuoka, Japan. Up to this time an accident victim who lost a great deal of blood and received no transfusion went into shock, which could prove fatal. Hasty transfusions of whole blood or blood plasma usually prevents the rapid drop in blood pressure which produces this shock. In emergencies, injection of salt water or sugared water have been used for this purpose. The newly discovered mixture comprising water plus the seaweed chemical is said to be superior to salt water or sugared water for transfusions to prevent shock, as it does not break down in the blood stream. (Canadian Fisherman, February 1960.)

RAT-FEEDING STUDIES TO DETERMINE PRESENCE OF ANTIMETABOLITES, WATER-SOLUBLE VITAMINS, AND ESSENTIAL MINERALS IN RAW MENHADEN AS COMPARED WITH RAW HADDOCK AND BEEF

By Caroline H. Kurtzman*, Robert R. Kifer**, and Donald G. Snyder***

ABSTRACT

A rat-feeding study was conducted to determine the possible presence of antimetabolites other than thiaminase in raw menhaden and to evaluate the contribution of the water-soluble vitamins and minerals in menhaden in meeting an animal's requirements for growth. For comparison, these factors were evaluated in raw haddock fillets, which do not contain thiaminase, and in raw beef round. It was found that the raw menhaden contained no antimetabolites affecting growth, other than thiaminase, and contributed considerably toward meeting an animal's requirements for essential minerals and for the water-soluble vitamins other than thiamine. Haddock fillets contained no antimetabolites, contributed a lower level of vitamins for growth than did menhaden, but apparently contained a higher level or a better balance of essential minerals. Beef round probably contained no antimetabolite, contributed about the same level of vitamins for growth as did menhaden, but apparently contained a lower level or poorer balance of essential minerals than did either menhaden or haddock.

INTRODUCTION

It is known that certain raw fishery products contain the enzyme thiaminase, which destroys thiamine (Lee 1948; Yudkin, 1949). This fact is important to fur farmers, who feed large quantities of raw fish to their fox and mink. Special precautions must be taken to avoid the effects of this antimetabolite when thiaminase-containing fish are included in the diet, or a thiamine deficiency disease, commonly called Chastek paralysis, may develop. Fur farmers often alternate the feeding of fish containing thiaminase with fish lacking thiaminase or with other protein food. Thiaminase can be destroyed by cooking the fish, since enzymes are heat labile. Nevertheless, many fur farmers prefer to feed the fish raw.

Although a regimen of alternate daily feeding of thiaminase-containing fish with other high-quality protein foods is apparently successful, many farmers and other nutritionists surmise that these fish may contain additional antiwater-soluble-vitamin factors. If this speculation were found to be true, further precautions during feeding would be necessary.

Also, although it is known that thiaminase-containing whole raw fish will contribute no thiamine to the diet, little is known regarding the possible contributions of these fish in meeting an animal's requirements of other water-soluble vitamins and of necessary minerals. Such information would aid in

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Fig. 1 - Staff member holding black-hooded rat shows equipment used in the antimetabolite study.

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the efficient and economical formulation of animal diets with both thiaminase and nonthiaminase-containing fish.

Raw, whole menhaden, which contains thiaminase, represents a food source of great potential value to the fur farmer. This industrial species of fish is quite abundant and should be available to the fur farmer at a low cost compared to other fish and land-animal meat. Menhaden apparently, in limited trials, has been successfully fed to mink under controlled conditions (Anonymous 1960).

The object of the study reported here, therefore, was to conduct animal-feeding studies to determine the possible presence of other antimetabolites in menhaden and to evaluate the contribution of this species in meeting animal requirements for water-soluble vitamins and nutritionally-important minerals. Rats were utilized in the study because of unavailability of mink at this laboratory. The filets of raw haddock and raw round of beef, fish and land-animal meat supposedly containing no antimetabolites, were included for testing and represent extremes of food sources to serve as comparisons and controls against the menhaden.

EXPERIMENTAL PROCEDURE

Groups of weaned rats of a highly inbred, black-hooded strain were fed the various diets summarized in table 1. The rats had free access to water. The high-energy supplement and the meat or fish were placed in separate feeding cups for free-choice selection.

Table 1 - Formulations of the Diets Fed the Various Groups of Rats

Diet Designation	Dietary Components					
	High Energy, Formulation ^{1/}	Whole Menhaden ^{2/}	Haddock Fillets ^{2/}	Beef Round ^{2/}	Thiamine Supplementation Only ^{3/}	Complete Water-Soluble Vitamin Supplementation ^{4/}
1	X	X	-	-	-	-
2	X	X	-	-	X	-
3	X	X	-	-	-	X
4	X	-	X	-	X	-
5	X	-	X	-	X	-
6	X	-	X	-	-	X
7	X	-	-	X	X	-
8	X	-	-	X	X	-
9	X	-	-	X	-	X

^{1/}Consists of sucrose, lard, cod-liver oil (in the proportions of 80, 16, and 4 parts by weight, respectively) and 0.02 grams vitamin E per 2,000 grams of diet--as a source of carbohydrate, fat, and fat-soluble vitamins.
^{2/}Raw and carefully ground to avoid altering any enzymes--as a source of protein, water-soluble vitamins, minerals, and energy.
^{3/}Oral daily supplementation of approximately 10 times the daily requirement fed with tuberculin syringe (0.2 milliliters of a thiamine hydrochloride solution of 10 milliliters thiamine HCl in 100 milliliters of water per 50 grams body weight).
^{4/}Oral supplementation of thiamine as above plus approximately two and one-half times daily requirement of each of the water-soluble vitamins fed in the drinking water.

Menhaden were obtained in excellent condition from a boat that had been at sea off the coast of North Carolina two days. The menhaden was frozen immediately after the boat was docked. At the laboratory, the frozen fish were ground in a Hobart meat grinder and placed in plastic bags for storage. Haddock filets and beef round were purchased at a local supermarket. The packaged haddock filets were prefrozen and were not ground for feeding purposes. The filets were stored in the original containers. The beef round was carefully trimmed of excess fat, ground with a Hobart grinder, and then frozen. All of these foodstuffs were held at 0° F. until shortly before the daily feedings.

Thiamine, when fed, was administered orally (table 1) to each rat rather than placed in the drinking water. (Data obtained from initial studies indicate that thiamine held in the drinking water is destroyed.)

Four rats, two males and two females, weighing 50 to 56 grams, were randomly allotted to each group. Not more than one litter-mate was allotted to any single group. The rats were housed individually in cages fitted on wire screens. The temperature of the room was maintained at 80° ± 2° F., and the humidity was maintained at 65 ± 5 percent. Daily records were kept of weights during the 4-week study, and observations were recorded of any noticeable physiological changes in the animals.

SUMMARY OF RESULTS AND DISCUSSION

The data are presented in figure 2.

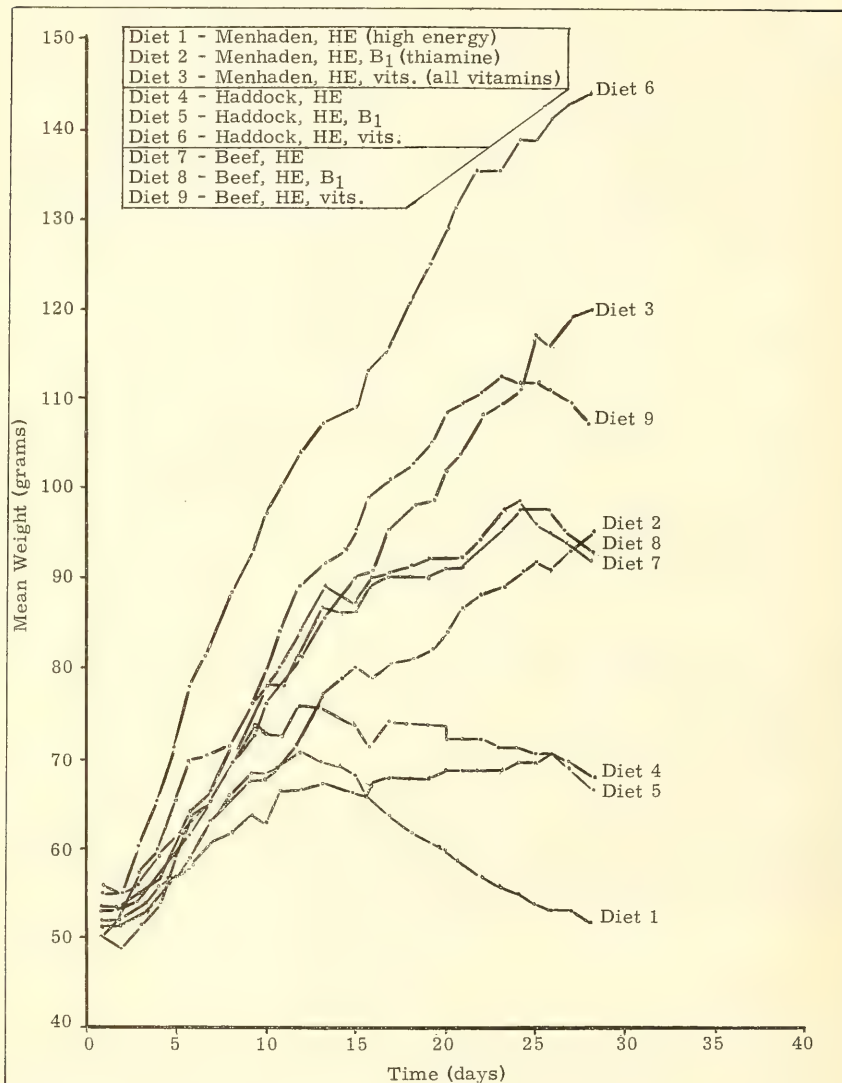


Fig. 2 - Gain in weight of groups of rats fed diets containing high-energy supplementation and fish or meat with and without vitamin supplementation.

MENHADEN DIET: The group of rats fed the diet containing menhaden and no vitamin supplementation (diet 1) began to lose weight on the 12th day and continued to lose weight thereafter. Characteristic symptoms of avitaminosis were noted during the testing period. These symptoms included loss of appetite during the second week, followed by loss of weight and loss of muscular coordination, capillary fragility, and sensitivity to touch during the third and fourth weeks of the study. By the fourth week, a marked difference in weight and physiological condition was noted for these rats compared to those receiving the same diet but with thiamine supplementation (diet 2) and with complete water-soluble vitamin supplementation (diet 3). Rats gained weight slowly when fed menhaden with thiamine supplementation (diet 2) but did not exhibit the deficiency symptoms observed with the rats of group 1. Rats fed menhaden and all the vitamins (diet 3) gained considerably more weight than did the rats fed diets 1 and 2. The mean gain of the rats fed diet 3 was about 80 percent of that normally obtained when rats of this colony are fed diets well balanced in nutrients.

These results indicate that raw whole menhaden (1) is thiamine deficient, as was expected, since menhaden contains thiaminase; (2) does not contain other antimetabolites detrimental to growth of rats; (3) contains sufficient levels of water-soluble vitamins (other than thiamine) to permit growth; and (4) contains sufficient levels of essential minerals to permit good growth. Results also indicate that thiaminase is the primary limiting factor for growth of rats under the feeding conditions described.

HADDOCK DIET: Rats fed the diet containing haddock (diet 4) gained well during the first week. Periods of loss of weight were observed during the second week. The rats lost weight slowly during the last 2 weeks and more noticeably during the last few days of the study. When fed the same diet with thiamine supplementation (diet 5), rats gained weight slowly until the last 2 days when they lost weight. When all the vitamins were added to the diet (diet 6), the rats gained considerable weight--nearly the optimum expected with rats of this colony. This gain was markedly greater than that obtained when the rats were fed the diet containing haddock with no vitamins (diet 4) or haddock with thiamine supplementation (diet 5).

These results indicate that raw haddock fillets (1) do not contain thiaminase or any other antimetabolite detrimental to growth, (2) contain a level of water-soluble vitamins barely adequate to maintain weight, and (3) contain levels of essential minerals to permit nearly optimum growth. Results also indicate that one or more water-soluble vitamins is the limiting factor for the support of growth of rats under the feeding conditions described. It was observed that some edema and tenderness developed in the rats during the last week of the study. The reason for this condition is not clear. The edema did not seem to be sufficiently acute to account for much of the gain in weight of the animals.

BEEF DIET: Rats fed diets containing beef with no vitamins and with thiamine supplementation (diets 7 and 8) gained fairly well until about the 13th day and then gained slowly until the last week of the study. These groups lost weight noticeably during the last 4 days of the study. The final weight of these rats was greater than the weight of the rats fed the menhaden with no vitamins (diet 1), and the rats gained weight somewhat better than did those fed diets 4 and 5. Even so, they lost weight during the last 5 days of the study, as did the rats fed diets 4 and 5. The final weight of the rats fed beef and a complete vitamin supplementation (diet 9) was not as great as rats fed either menhaden or haddock with a complete vitamin supplementation (diets 3 and 6), although the levels and ratios of high-energy supplement and meat or fish consumed by the rats fed these diets were similar. Before the loss of weight, the growth of the group fed diet 9 was about equal to that of the group fed diet 3 but considerably less than that of the group fed diet 6.

These results indicate that raw beef round (1) probably does not contain thiaminase or any other antimetabolite detrimental to growth and (2) contains a level of water-soluble vitamins sufficient to permit fair growth for a limited time. The results also indicate that one or more of the water-soluble vitamins is primarily a limiting factor for support of growth and that there may be an additional limiting factor for growth of rats, not definable by this

study, that is present in beef and is not present in fish. Quite possibly, this additional limiting factor for growth in beef may be that the minerals necessary for growth are not present in adequate amounts in beef and are present in adequate amounts in fish.

EFFECT ON HAIR COLOR: It was observed near the end of the study that the normally dark brown portion of the hair of the rats fed diets 4, 5, 6, 7, 8, and 9 turned silvery grey. The reason for this change in hair color is not apparent.

CONCLUSIONS

Results indicate that raw whole menhaden contains no antimetabolites^{1/} other than thiaminase and that they contribute considerably toward meeting an animal's requirements for minerals and for the water-soluble vitamins other than thiamine. Raw haddock fillets contain no antimetabolites, contribute a lower level of vitamins for growth than does menhaden, but apparently a higher level of essential minerals. Raw beef round probably contains no antimetabolites, contributes about the same level of vitamins for growth as menhaden, but apparently a lower level of essential minerals than either menhaden or haddock.

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^{1/}For the purposes of this report, antimetabolites include only antiwater-soluble-vitamin factors.



HERRING ROE INDUSTRY GETS START IN NORWAY

Herring roe, specially salted, is a new export product of Norway. In Japan, known as "Kazanoko," it is an expensive delicacy eaten in big quantities during the New Year celebrations. Last year was the first time a shipment of 220 pounds was sent to Japan. This year, between 20 and 30 fish plants in Norway are making "Kazanoko."

"Kazanoko" is an old tradition in Japan. Among other things, it is supposed to increase fertility. The name, "Kazanoko" translated directly means "more sons and daughters."

The salted roe is eaten without any special preparation. It is eaten especially with rice wine. Since Japan lost most of her herring production territory, she has turned to Norway for this special delicacy. But the 1961 herring failure in Norway means that there won't be much herring roe this year.

The herring roe which is mostly used is "Moree Coast Eel, glass-rogn." It is an over-ripe herring roe, soft like jelly, which used to be thrown away. The roe is salted for three days to make it hard and solid. After three days, it is washed and then salted again. Then it is also frozen. (The Fisherman, April 14, 1961.)

TRENDS AND DEVELOPMENTS

Fishing Vessels and Gear Developments

EQUIPMENT NOTE NO. 12--A NEW SCALLOP TRAWL FOR NORTH CAROLINA:

North Carolina fishermen recently developed a small lightweight trawl as an effective

gear for calico scallop fishing. Advantages of the new trawl are: (1) It is more effective than a Georges Bank dredge on the hard sand bottoms of the North Carolina beds; (2) it is easily handled; (3) its initial and replacement costs are low; and (4) existing ves-

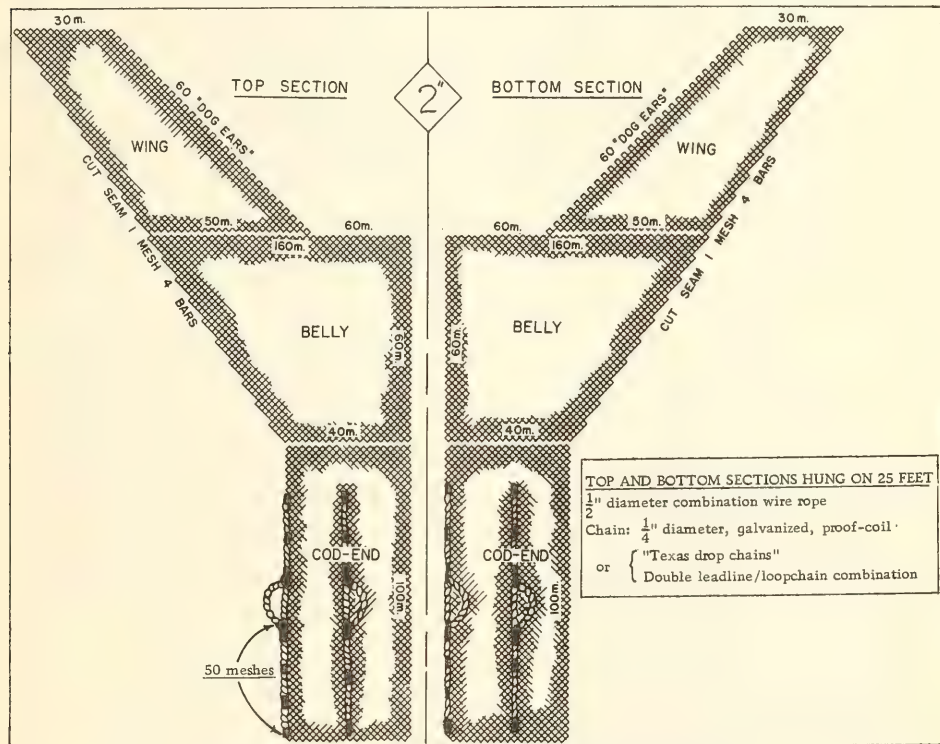


Fig. 1 - Cutting diagram for a 25-foot North Carolina calico scallop trawl.

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FISH AND WILDLIFE SERVICE
SEP. NO. 649

sels can be converted from other trawl or dredge fisheries to scallop trawling, quickly and cheaply. The disadvantage that the new trawl requires more maintenance and repair time than do other types of scallop gear is outweighed by the advantages. Most captains fishing North Carolina scallop beds are using trawls modeled after the new design.

A unique feature of the new trawl is that top and bottom sections are identical. When the original bottom sections become weakened, the trawl is simply turned over. Top and bottom trawl lines are switched, chafing gear and beckets are changed, and the original, relatively unworn top sections become the new bottom sections. The catch to be expected from a 25-foot scalloptrawl on a good bed ranges from 400 to 500 bushels of whole scallops per day (24 hours). Double-rigged boats, dragging twin trawls, have caught 1,000 bushels in a day.

TRAWL SPECIFICATIONS AND CONSTRUCTION DETAILS

The new scallop trawl (fig. 1) is built of 2- to 4-inch (stretched mesh) cotton webbing and is hung on 25 to 28 feet of $\frac{1}{2}$ -inch combination hanging rope. Since the trawl is designed so that it will fish with either surface down, there is no overhang, and top and bottom sections (wings, belly, and cod end) are identical. The sections are laced together in the manner described by Knake (1956) to form a 2-seam net. Belly sections are short so that the amount of webbing exposed to wear is as small as possible. Heavy beckets (fig. 2)



Fig. 2 - Beckets. Four beckets are seized the complete length of the cod end.

are used around the top section of the cod end, instead of the usual bag rings, to provide greater strength to the trawl. Manila or nylon rope is laced through the beckets to serve as a splitting strap.

TRAWL ACCESSORIES

Chafing Gear: Polyethylene rope yarns or automobile inner tube strips are used as chaf-

ing gear. For additional protection, a false belly of heavy webbing is often laced over the bottom belly of the trawl.

Texas Drop Chains, Tickler Chains, and Double Leadlines: The Texas drop chain (fig. 3) is used to increase the scraping and digging action of the trawl. It consists of a length of chain cut one foot shorter than the length of the leadline and fastened to the leadline at regular intervals by 2-, 4-, or 6-link

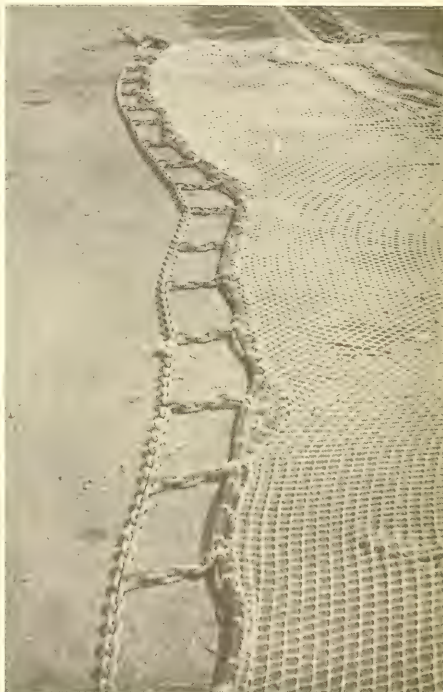


Fig. 3 - The Texas drop chain--a popular leadline attachment.

chain drops. The number of drops used varies from trawl to trawl. Regardless of the number used, the first drop is attached at the center of the leadline, and others are added successively, on either side, until final bights are formed at the ends of the chain. The chain will stretch with use and decrease the efficiency of the trawl unless the drops are examined and adjusted frequently. Adjustments are made to the end bights (fig. 4).

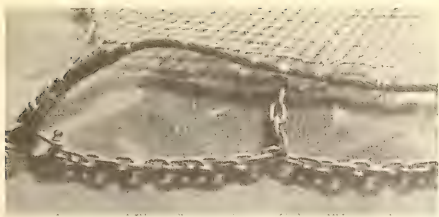


Fig. 4 - Adjustments to maintain the fishing efficiency of trawls equipped with Texas drop chains are made in the last bights of the chain.

Other devices used, singly or in combination, to increase the scraping action of the trawl and scare up the scallops in front of the trawl include tickler chains and double leadlines (fig. 5). One to three tickler chains are often used. These are stretched

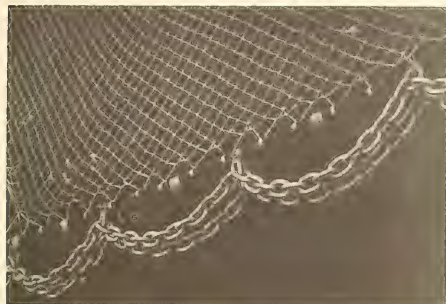


Fig. 5 - The double leadline. A device used to increase the weight of the forward bottom portion of the trawl and to increase its digging and scraping action.

across the mouth of the trawl from points of attachment near the trailing bottom corner of each door. Doubling the leadline, and attaching a loop chain, serves to increase the weight of the leading edge of the trawl and may serve to make the trawl tend bottom more effectively.

Leglines, Trawl Boards (Doors) and Brides: Most fishermen feel that a trawl that fishes close to the trawl boards will catch many of the scallops that are scared up by the boards. Short leglines between net and boards are favored for this reason.

The size, weight, and type of boards used with the scallop trawl depend on the size and power of the vessel used and the personal preferences of the user. Bracket boards

measuring 3 by $5\frac{1}{2}$ feet and weighing 250 pounds are used most commonly.

The complete rig (boards, trawl, and accessories) is fished from a single warp that is connected to the boards by a 10-fathom bridle of $\frac{3}{8}$ -inch wire rope.

TRAWL OPERATION AND PERFORMANCE

The trawl is set and dragged in the usual manner. Most of the North Carolina vessels drag from outrigger booms in the familiar shrimp-boat fashion (figs. 6 and 7). Owing to its light weight and small size the trawl is easily handled. At the end of a drag, the splitting



Fig. 6 - Double-rigged scallop trawlers tied to the dock in Beaufort, North Carolina, after having unloaded their catches.



Fig. 7 - A single-rigged scallop trawler on the grounds. The trawl is dragged from the starboard outrigger boom.

strap is brought to the rail of the boat and hooked to the hoisting tackle. The cod end is brought aboard, and the catch is dumped on deck. The trawl is then reset. Any scallops that might be in the webbing above the splitting-strap beackets are left in the net until the end of the next drag--or are allowed to spill back into the water. The time that would be consumed in making a second lift of the net to shake the scallops down into the cod end, and bring them aboard, is used more profitably in making an additional drag. By limiting drags to 15 minutes, the catches usually fit well within the cod end, and little loss is experienced.

In a series of trial drags lasting 36 hours, a 25-foot scallop trawl and an 8-foot George's Bank dredge were fished side by side on the hard sand bottom of the Core Bank calico scallop bed. Local crews handled both pieces of equipment. The trawl consistently outfished the dredge--sometimes by as much as 6 to 1. Apparently many of the scallops congregate in depressions in the otherwise smooth bottom. The rigid dredges, unable to dig into the hard sand, seem to slide over the tops of these depressions; whereas the more flexible trawls follow the bottom, dip down into the depression, and obtain the greater catch.

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1/Similar trials on the Cape Canaveral, Fla., beds indicate that on softer bottoms the dredges generally outfished the trawls.

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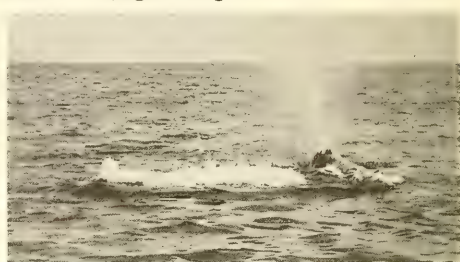
California

PELAGIC FISH POPULATION SURVEY CONTINUED:

Airplane Spotting Flight 62-1-Pelagic Fish: The inshore area from the United States-Mexican Border to the northern end of Monterey Bay was surveyed from the air (January 16-18, 1962) by the California Department of Fish and Game's Cessna "182" 9042T to determine the distribution and abundance of pelagic fish schools. Weather

conditions were generally good throughout the area.

Pelagic fish schools were not abundant, but medium anchovy school groups were found off Port Hueneme, in the northern portion of Santa Monica Bay. Only one small sardine school (Santa Monica Bay) was observed during the flight.



Pair of gray whales traveling together. One just sinking with much white water due to speed, and other blowing, with blow-holes open.

Southbound gray whales (76 in all) were noted throughout the survey area.

Two large groups of basking sharks were observed, one composed of approximately 55 individuals was very close to shore in Morro Bay and the other, composed of about 45 actively feeding individuals, was about one-half mile north of La Jolla Point. While these sharks are to be expected in Central California, their occurrence as far south as La Jolla is unusual.

Note: See Commercial Fisheries Review, March 1962 pp. 11-12.

* * * * *

ROCKFISH TAGGING STUDIES CONTINUED:

M/V "N. B. Scofield" Cruise 62-S-1-Rockfish: The California Department of Fish and Game research vessel N. B. Scofield cruised (Jan. 23-Feb. 7, 1962) in the inshore area from Pt. Conception to Pt. Montara and the Farallon Islands to capture blue rockfish (Sebastes mystinus) by hook and line for tagging, food studies, age, and other life history information.

The cruise was shortened by stormy weather; excellent weather prevailed during the remaining 13 days. A total of 1,738 blue rockfish was caught, of which 1,336 were

tagged, 74 were preserved for special studies on freezing shrinkage and for meristic counts, and 57 were preserved for stomach analysis. Of the tagged fish, 14 were delivered to aquaria at Monterey and Santa Cruz for observation. All tagged fish were deflated and 68 required stomach replacement; all were anesthetized in a special solution.

Note: See Commercial Fisheries Review, March 1962 p. 12.

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CENTRAL VALLEY KING SALMON SPAWNING RUN IS DOWN:

King salmon spawning stock which used California's Central Valley streams in 1961 numbered 256,000 fish, the California Department of Fish and Game reported on March 17, 1962. This was one of the smallest runs on record and about half the size of the excellent 1960 run when 482,000 kings spawned in the same area which has an estimated spawning capacity of 500,000 fish.

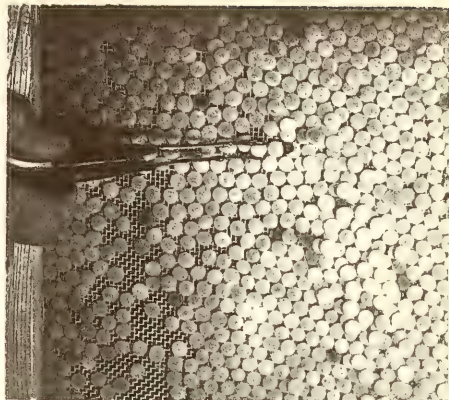
While wide annual variations in spawning runs such as this are not unusual, marine resources biologists uncovered no comprehensive reason for this decrease while making their 1961 salmon spawning survey.

"A drop like this one does not necessarily endanger future salmon fishing," declared the marine resources chief. "But we do feel it is a matter of concern. Although similar low years have occurred off and on in the past without vitally affecting the salmon fishery, the possibility of two low years in a row could bring a considerable drop in the salmon stock based on those spawning years."

The annual salmon spawning stock survey covers an area which extends from Redding south into the San Joaquin Valley, and most of the State's salmon are produced in that area. It includes aerial counts of individual spawning beds and concentrations of spawning fish. Ground observers keep a careful count of spawned-out salmon carcasses, destroying those counted to avoid duplication.

Once again the main Sacramento River accommodated a majority of all salmon spawners in the Central Valley. However, only one stream in the Sacramento Valley registered an increase. Mill Creek had 2,000 fish where 1,000 spawned in 1960.

The Nimbus Hatchery on the American River recorded an all-time high egg take



Picking dead salmon (white) eggs from tray.

from salmon, although the number of spawning salmon in the American River itself was below that of last year.

San Joaquin Valley streams registered several record-low spawning stocks, including the Mokelumne, Consumnes, Merced, Tuolumne, Stanislaus, and main San Joaquin rivers. There was virtually no spawning run in those rivers, with the exception of the Tuolumne and Stanislaus.



Central Pacific Fisheries Investigations

SIZE AND SEX DISTRIBUTION OF TUNA BEING STUDIED:

One of the persistent features in the size distribution of tuna taken by long-line gear is the predominance of males among the larger fish. This has been especially noticeable for yellowfin and big-eyed tuna. The hypothesis formulated was that the disproportionate sex ratio in large fish was the result of differential growth between sexes. This difference, if it exists, would be important in population studies for determining maximum yield. To test the hypothesis and to examine the sex composition of the catch, a sampling program was initiated in April 1960 to obtain size and sex data on yellowfin and big-eyed tuna from the Hawaiian long-line catch. The program is being conducted by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Honolulu.



A long-line vessel (sampler) of the Honolulu fleet.

Although sampling has not extended sufficiently in time to determine growth rates with great precision, the big-eyed data collected over the first 12 months of sampling (April 1960 through March-1961) were analyzed to test the hypothesis. The results show a difference in growth rate with sex, the males growing at a faster rate than the females.

The analyses included fitting normal curves to the monthly weight frequencies by the probability paper method. From the multimodal distribution the mean and standard deviation of 4 or 5 modal groups were calculated for each month. Evidence that these modal groups represented year-classes is their progression in time, which is such that the mean size of a modal group is approximated by the succeeding modal group one year later.

To estimate the ages of the year-classes and to mathematically describe the growth of big-eyed, a composite figure was constructed assuming similar growth rates among the year-classes. To estimate the age at initial recruitment, April was selected as the month of peak spawning. Several females with large ovaries were observed in the catch during early spring of 1961. By extrapolating the progression of modal sizes and assuming a rapid early growth, the 45-pound fish entering the long-line fishery as recruits in October were estimated to be 18 months old. It is possible that the rate of growth of the small fish may be overestimated.

The collection of size and sex data will be continued to confirm these preliminary findings and to follow several year-classes through the fishery. In addition, the gathering of data on small big-eyed which are occasionally captured by surface fishing meth-

ods will be intensified. Finally, a check will be maintained on the gonad condition of big-eyed to confirm the postulated spawning peak in April.

* * * * *

SENSORY SYSTEMS OF SKIPJACK TUNA BEING STUDIED:

The sensory systems of skipjack tuna are being studied by the staff of the behavior program at the U. S. Bureau of Commercial Fisheries Biological Laboratory, Honolulu. In order to provide basic information for future studies on the sense of smell, the structure of the skipjack olfactory organ has been examined and described.

The external openings of the olfactory system, the nares, fit into the general streamlining of the skipjack. The anterior naris is a very small circular opening, only 0.01 inch in diameter on a 20-pound fish, and is directed forward. The posterior naris is an elongated vertical slit 0.7 inches behind the anterior naris. This slit is directed posteriorly, with a thin flap of skin overlapping it anteriorly. Both of these nares open into the olfactory capsule. The actual sensing structure, the olfactory rosette, is located directly inside the anterior naris, and consists of 40 radially-oriented leaves. A longitudinal passage between two mounds of connective tissue leads to the posterior naris. Below this passage an accessory sac extends posteriorly along the jaw. This sac is compressed by the movement of the jaw while the mouth is being closed and is expanded when the mouth is opened, theoretically acting as a bellows-type pump.

Experiments were conducted to find out how water moved through the capsule and to see if the postulated pump was functional. Heads of fresh fish were placed in a current of water flowing at 3, 10, or 15 feet a second. These currents corresponded to slow, average, and fast swimming speeds observed in feeding skipjack at sea. (The speeds were calculated in the Laboratory from underwater movies taken of skipjack from the stern viewing chamber of the Bureau's research vessel, the Charles H. Gilbert.) Dye was introduced into the current to determine how the water entered the olfactory capsule. In a current of 10 feet per second the same amount of water entered the capsule whether the mouth was opened and closed or held



Stern viewing chamber of the Bureau's research vessel, the Charles H. Gilbert.

stationary. Yet, in still water more entered when the jaws were worked. Additional experiments demonstrated that the posterior naris acted as a one-way excurrent valve in flowing water, but allowed some water to enter in the absence of a current. In standing water, with the capsule filled with dye, little spurts of dye were ejected from the posterior naris when the jaws were closing, whereas almost no dye was ejected from the anterior naris.

We conclude that a continuous stream of water flows very slowly through the olfactory capsule of a swimming skipjack, and that an additional increment of water is drawn in via the anterior naris when the mouth is opened and is ejected via the posterior naris when the mouth is closed.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-FEBRUARY 1962:

Fresh and Frozen: For the use of the Armed Forces under the Department of Defense, substantially less fresh and frozen fishery products were purchased in February 1962 than in the same month of 1961 by the Defense Subsistence Supply Centers. The decline was 37.5 percent in quantity and 13.8 percent in value. Compared with the previous month, February 1962 purchases were down 37.8 percent in quantity and 20.3 percent in value.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, February 1962 with Comparisons

QUANTITY				VALUE			
February 1962	1961	Jan.-Feb. 1962	1961	February 1962	1961	Jan.-Feb. 1962	1961
1,089	1,743	2,840	3,599	794	921	1,790	1,846

During the first two months of 1962, purchases were also down 21.1 percent in quantity and 3.0 percent in value as compared with the same period in 1961. Because of higher prices for most types of frozen fishery products and purchases of higher-priced products, the value of the purchases did not drop as steeply as the quantity.

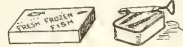
Prices paid for fresh and frozen fishery products by the Department of Defense in February 1962 averaged 72.9 cents a pound, about 16.0 cents less than paid in the previous month and 20.1 cents less than paid in February 1961.

Table 2 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, February 1962 with Comparisons

Product	QUANTITY				VALUE			
	February 1962	1961	Jan.-Feb. 1962	1961	February 1962	1961	Jan.-Feb. 1962	1961
Tuna	...	(1,000 Lbs.)	...	...	...	(\$1,000)	...	...
Salmon	-	363	3,113	1,365	-	161	1,739	603
Sardine	4	15	7	36	2	6	4	17

Canned: A small amount of canned sardines was the principal canned fishery product purchased for the use of the Armed Forces in February this year. For the first two months of this year purchases of canned fish were up substantially as compared with the same period of 1961 because of a large purchase of canned tuna in January.

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.



Florida

FISHERIES RESEARCH, JULY-DECEMBER 1961:

Research with funds provided by various sources, including the Florida State Board of Conservation and the U. S. Fish and Wildlife Service is being carried on by the Marine Laboratory of the University of Miami. The research of interest to commercial fisheries which was reported in the Laboratory's

September 1961 and December 1961 Salt Water Fisheries Newsletter follows:

Larval Shrimp: The spawning grounds of the famed Tortugas pink shrimp are under observation by Marine Laboratory scientists. The shrimp spawn mainly during the summer months in water from 50 to 150 feet in depth, but 1961 was a poor spawning year. Young larvae collected in plankton nets for study were only about one-fortieth as abundant as in 1960.

Reasons for the spawning "failure" are being looked for in changes in the oceanographic climate of the area this year. In 1961 temperatures of the bottom layer of water were 5°-10° F. cooler than in 1960. Also, strong currents were present in the area which could carry larvae from the spawning grounds into the Straits of Florida, where they would be swept away from the shallow inshore nursery areas in which they grow for some months before migrating to the offshore spawning grounds.

Poor shrimp catches in many parts of the Gulf and South Atlantic regions in 1961 caused severe economic hardship in the fishing industry. These larval shrimp studies, sponsored by the U. S. Fish and Wildlife Service, are part of a concerted attempt by many government and university scientists to discover the reasons behind fluctuations in the catches of commercial shrimp.

Spawning seasons and grounds of the Tortugas pink shrimp continued to be mapped in the last quarter of 1961. Few shrimp larvae were found during the summer and fall of 1961 compared to previous years. In July and August 1961, pink shrimp larvae were only about one-fortieth as abundant in the center of the spawning grounds as in the corresponding months of 1960. Unusually cold water temperatures occurred close to the bottom where the adult shrimp live. Bottom water temperatures in the area of heavy spawning in 1960 were colder in 1961. Whether the lower temperatures caused the reduction in the numbers of larvae remains to be proven.

The scientists are making a careful check to determine whether this light spawning will affect the success of the fishery in 1962.

Ecology of Florida Bay: The hot, dry weather of the summer months of 1961 caused

a severe reduction in the run-off into Everglades National Park. With this reduction of fresh-water, salinity increased rapidly both in Florida Bay and in the inner bay areas where the water is normally brackish. This increase in salinity has made it possible for marine fishes to invade the inner waters.

In addition to the increased catches of sport fish, in the third quarter of 1961 there were large numbers of young menhaden and anchovies in Coot Bay and eastern White-water Bay, where they had been absent for most of the previous four years because salinity values were very low. These are especially valuable as food for larger fishes.

The increased salt content of the inner bays has made it possible for marine algae to re-colonize these areas to such an extent that the bottom is becoming stabilized once more, allowing the water to become clear.

Pink shrimp catches from June-August 1961 were lower than those reported in the same period of 1960, but they were reasonably high. Unfortunately for the hungry fish, pink shrimp in the last quarter of 1961 were scarce in inshore waters.

Spotted Sea Trout: Over 180 sea trout tags were returned from the Pine Island area during the third quarter of 1961. A total of 1,529 tags (28 percent) had been returned by the third quarter.

The fish were tagged in January 1961 to determine the abundance and mortality rates of this fish population. Catch information returned with the tags supports earlier findings which indicated that this sea trout population is sedentary. The tags were collected monthly by a Marine Laboratory biologist during trips to obtain monthly landing reports from fish dealers.

Tags from spotted sea trout continued to be recovered in the last quarter of 1961 from the tagging experiments carried out as long ago as three years, but in reduced numbers. Over 30 percent recoveries have been made since the large-scale tagging experiment was carried out during January 1961 at Fort Myers.

Fish Behavior Studies: A scientist visiting from Japan in the third quarter of 1961 ended his project on the structure and function of the eyes of pelagic fishes and re-

turned to Japan. His investigations indicated that in open-sea fish, as in shallow-water species, it is possible to predict the feeding habits and habitat of a fish from a careful examination of its sense organs, including the eyes.

For example, surface swimmers such as the sailfish see most clearly those objects which are straight ahead of them, while fish that swim considerably beneath the surface but feed on fish swimming at the surface see most easily objects slightly above them.

Experiments on the effects of light on the behavior of the pink shrimp (*Penaeus duorarum*) and white shrimp (*P. setiferus*) were continued in the third quarter of 1961. Various wave lengths and intensities of light were used and the resultant behavior evaluated. Preliminary evidence indicates that the use of lights to capture shrimp may well be possible. More work is required before this method can be recommended with certainty, but the findings thus far indicate that it is possible certain wave lengths of light may attract these shrimp at certain times of day more effectively than the odor of fresh food fish.

Data is being accumulated on the ability of sharks to detect and respond to low-frequency sound. Much more work is needed on this project before meaningful and useful results can be expected, but in general it can be said that the sense of hearing in sharks is keener than had been anticipated.

Plans are in progress to build a facility for studying the behavior of marine animals at the Marine Laboratory. The building will be equipped with apparatus for controlling those aspects of the environment which seem most important. In this manner, ecologists will be able to study the effect of temperature, for example, on the settling rates of marine organisms.

The importance of such a facility to behavior studies lies in the fact that laboratory animals do not often exhibit the behavior patterns that are seen in nature. With it animals can be maintained under natural conditions, as measured in the field. These conditions can then be changed, and the effects of the change on behavior observed.

An interesting project on one aspect of communication between fishes was in the

last quarter of 1961. Neon gobies "make their living" by removing parasites from the bodies and mouth cavities of larger fishes. Since they are "bite-size" and good to eat, why are they not, in fact, eaten by these large fishes? In a study of the interaction between groupers and neon gobies it was found that the gobies, in effect, ask permission to enter the mouth of the grouper by touching them on the flank. If, however, a grouper solicits the visit by holding very still near the goby, with its mouth open, the goby can enter with impunity without asking. In studying these relationships, facts and techniques are being learned which will be of use in studying the behavior of the larger, more difficult to keep, game and commercial fishes.

Note: See Commercial Fisheries Review, Dec. 1961 p. 28.

* * * * *

OYSTER BOTTOM LEASES DOUBLED SINCE END OF 1960:

Oyster bottom leases in Florida have doubled since the close of the 1960 calendar year, the Director of the Florida State Board of Conservation announced on March 20, 1962. He said that as of December 31, 1960, there were 58 oyster leases with a total of 1,954.77 acres active. From January 1 through December 31, 1961, 33 leases were granted for a total of 1,298.80 acres. Beginning on January 1 to and including March 13, 1962, 21 leases were granted for 918.87 acres. As of March 1962, there were active 112 oyster leases for a total of 4,172.44 acres.

The Gulf coast of the State had shown the most activity and interest in the development of leased bottoms. The oyster production for the 1961/62 season would be the highest in the State's history. The marketing of Florida oysters has been maintained at a steady level this season and shipments to out-of-state destinations were running high as of March.



Frozen Fish

MICROWAVE THAWING STUDY STARTED:

Preliminary tests of thawing frozen fishery products have been started at the Gloucester Technological Laboratory of the U. S. Bureau of Commercial Fisheries. A 13½-pound block of whiting was thawed after 2 minutes

of exposure to microwave energy; this compares to about 2 hours in circulating water. The level of microwave energy to which the product was exposed was regulated so that it received the maximum energy until the internal temperature of the block reached 27 degrees F. Then to prevent cooking, the energy was reduced to about one-tenth of the initial value. The cost of such a commercial unit would be about \$50,000.

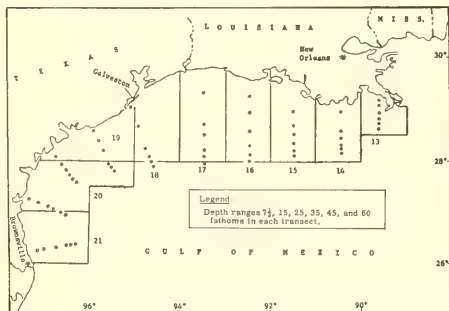
Note: See Commercial Fisheries Review, March 1962 p. 17.



Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Belle of Texas" Cruise BT-18 and "Miss Angela" Cruise MA-12: Good catches of 12-15 count heads-on brown shrimp were made in the 20-40 fathom range off Port Isabel and in the 40-60 fathom range off Terrebone Bay by the M/V Belle of Texas and the M/V Miss Angela between March 20 and 28, 1962. A good catch of 21-25 count brown shrimp was also made off Terrebone Bay in the 20-40 fathom range. In the same depth range (20-40 fathoms), a good catch of 15-20 count brown shrimp was made off Morgan City. Both research vessels are operated by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries in studying the distribution of shrimp in the Gulf of Mexico.



Shows the station pattern for Cruise BT-18 of the M/V Belle of Texas and Cruise MA-12 of the M/V Miss Angela, March 20-28, 1962.

A total of 9 statistical areas were covered. In each area one 3-hour tow was made in each of 3 depth ranges. A 45-foot shrimp trawl was used. Most of the catches were

brown shrimp, but there were some small catches of white shrimp. The largest catch was 54 pounds of 12-15 count heads-on shrimp in area 21 in 20-40 fathoms. The next largest catch was 48 pounds of 12-15 count shrimp in 40-60 fathoms in area 14, followed by a catch of 42 pounds of 15-20 count shrimp in 20-40 fathoms in area 15.

Note: See Commercial Fisheries Review, April 1962 p. 15.



Industrial Products

FISH MEAL, SOLUBLES, AND OIL:

United States Major Indicators, February 1962: For the first month of 1962,



Outside view of a Reedsville, Va., menhaden industrial products plant.

Major Indicators for U.S. Fish Meal, Solubles, and Oil, February 1962					
Item and Period	1962	1961	1960	1959	1958
..... (Short Tons)					
Fish Meal Production and Imports:					
Production 2/:					
April	1/	6,179	5,076	6,810	5,143
March	1/	2,751	2,955	2,122	2,601
February	2,700	2,071	1,923	2,128	1,842
January	2,732	2,713	2,433	3,095	2,075
Jan.-Dec. 3/	1/	289,039	257,969	275,396	226,299
Jan.-Dec. final tot.	1/	1/	290,137	306,551	248,140
Imports:					
April	1/	19,060	10,397	17,654	11,758
March	1/	20,458	18,652	16,719	7,233
February	1/	14,344	8,081	19,463	11,219
January	25,427	9,531	8,571	19,700	7,696
Jan.-Dec. totals	1/	217,845	131,561	132,955	100,352

(Table continued on following page)

Major Indicators for U.S. Fish Meal, Solubles, and Oil, February 1962 (Contd.)					
Item and Period	1962	1961	1960	1959	1958
	(Short Tons)				
Fish Solubles Production and Imports:					
Production 4/:					
April	1/	2,539	2,870	6,987	3,611
March	1/	2,295	2,462	2,382	1,371
February	1,800	1,502	1,812	2,211	1,133
January	1,637	1,129	1,697	1,913	1,385
Jan.-Dec. totals .	1/	109,780	98,929	165,359	130,177
Imports:					
April	1/	220	134	1,622	45
March	1/	135	87	410	84
February	1/	155	1,875	398	149
January	273	219	214	954	473
Jan.-Dec. totals .	1/	6,739	3,174	26,630	14,567
	(1,000 Gallons)				
Fish Oil Production and Exports:					
Production:					
April	1/	439	248	436	200
March	1/	63	66	42	84
February	47	44	51	38	49
January	93	55	46	64	46
Jan.-Dec. 3/ 5/ ..	1/	33,471	26,690	24,418	21,957
Jan.-Dec. totals .	1/	1/	27,886	24,978	22,028
Exports:					
April	1/	980	761	1,116	254
March	1/	753	421	600	1,664
February	1/	2,327	3,177	999	1,038
January	679	1,793	276	898	825
Jan.-Dec. totals .	1/	16,331	19,155	19,264	12,539

1/Not available.

2/Does not include crab, shrimp, and miscellaneous meals.

3/Preliminary data computed from monthly data.

4/Includes homogenized fish.

5/Represents over 95 percent of the total production.

Note: Data for 1962 and 1961 are preliminary.

1/ Not available.

2/ Does not include crab, shrimp, and miscellaneous meals.

3/ Preliminary data computed from monthly data.

4/ Includes homogenized fish.

5/ Represents over 95 percent of the total production.

Note: Data for 1962 and 1961 are preliminary.

United States production and imports of fish meal and solubles were up as compared to the same month in 1961. While production of fish oil was also up, exports were down substantially. February 1962 production of fish fish meal, oil, and solubles was greater than in the same month of 1961.

* * * * *

U. S. Production, February 1962: Preliminary data on U. S. production of fish meal,

U. S. Production 1/ of Fish Meal, Oil, and Solubles, February 1962 (Preliminary) with Comparisons				
Region	Meal Short Tons	Oil 1,000 Gallons	Solubles . . (Short Tons)	Homogenized
February 1962:				
East & Gulf Coasts. . .	575	11	43	3/90
West Coast 2/	2,156	35	1,608	-
Total	2,731	46	1,651	90
Jan.-Feb. 1962 Total	5,402	120	3,220	110
Jan.-Feb. 1961 Total	4,263	98	2,486	145
1/Does not include crab meal, shrimp meal, and liver oils.				
2/Includes Hawaii, American Samoa, and Puerto Rico.				
3/Includes condensed fish.				

1/ Does not include crab meal, shrimp meal, and liver oils.

2/ Includes Hawaii, American Samoa, and Puerto Rico.

3/ Includes condensed fish.

oil, and solubles for February 1962 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.

* * * *

U. S. Production, January 1962: In January 1962, 2,700 tons of fish meal and scrap and 92,900 gallons of marine animal oils were produced in the United States. Compared with January 1961, this was a slight decrease (less than 1 percent) in meal and scrap production, but an increase of 37,800 gallons (69 percent) in oil.

In January 1962, tuna and mackerel accounted for 1,600 tons or 60 percent of the meal total, and 37,800 gallons or 41 percent of the oil production. Pacific sardines contributed 455 tons (17 percent) to the production of meal and 14,000 gallons (15 percent) to the production of oil.

A total of 1,600 tons of fish solubles was produced in January 1962--180 tons more than in January 1961. The produc-



A portion of a menhaden industrial products plant in Reedsville, Va.

U.S. Production of Fish Meal, Oil, and Solubles, January 1962 ^{1/}			
Product	January		Total
	1962	1961	1961
..... (Short Tons)			
Fish Meal and Scrap:			
Alewife	-	-	89
Herring:			
Alaska	-	-	3,810
Maine	-	-	1,239
Menhaden ^{2/}	-	-	246,990
Sardine, Pacific	455	-	2,744
Tuna and mackerel	1,641	1,567	21,432
Unclassified	636	1,171	12,735
Total	2,732	2,738	289,039
Shellfish and marine animal meal and scrap	3/	3/	10,000
Grand total meal and scrap	3/	3/	299,039
Fish solubles	1,597	1,418	98,003
Homogenized condensed fish	40	65	11,777
..... (Gallons)			
Oil, body:			
Alewife	-	-	6,900
Herring, Alaska	-	-	727,517
Menhaden ^{2/}	-	-	30,814,537
Sardine, Pacific	3/14,200	-	83,010
Tuna and mackerel	3/37,816	27,853	751,590
Other (including whale)...	40,920	27,250	1,087,610
Total oil	92,936	55,103	33,471,164

^{1/} Preliminary data.^{2/} Includes a small quantity produced from thread herring.^{3/} Not available on a monthly basis.

tion of homogenized condensed fish amounted to 40 tons--25 tons less than in January 1961.

* * * * *

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, January 1962:

Based on domestic production and imports, the United States available supply of fish meal during January 1962 amounted to 28,200 tons--15,900 tons or 130 percent more than in January 1961. Domestic production was slightly less, but imports were 15,900 tons greater than in January 1961. Peru continued to lead other countries with shipments of 20,100 tons during January 1962.

The total United States supply of fish meal in 1961 (517,000 tons) exceeded the peak year 1959 when the quantity amounted to nearly 440,000 tons.

The United States supply of fish solubles (including homogenized fish) during January 1962 totaled 1,900 tons--208 tons more than in the same month of 1961. Solubles and homogenized fish manufactured

U. S. Supply of Fish Meal and Solubles, January 1962 and Comparative Data			
Item	January		Total
	1962 ^{1/}	1961	1961
..... (Short Tons)			
Fish Meal and Scrap:			
Domestic production:			
Menhaden	-	-	246,990
Tuna and mackerel	1,641	1,567	21,432
Herring, Alaska	-	-	3,810
Other	1,091	1,171	26,807
Total production	2,732	2,738	299,039
Imports:			
Canada	2,587	1,382	33,218
Peru	20,082	6,969	151,439
Chile	1,157	841	12,074
Angola	-	-	1,543
Republic of So. Africa	1,500	280	13,026
Other countries	101	59	1,545
Total imports	25,427	9,531	217,845
Available fish meal supply	28,159	12,269	516,884
Fish Solubles:			
Domestic production ^{2/}	1,637	1,483	109,780
Imports:			
Canada	208	39	1,001
Denmark	-	-	28
Other countries	65	180	5,710
Total imports	273	219	6,739
Available fish solubles supply	1,910	1,702	116,519

^{1/} Preliminary.^{2/} 50 percent solids. Includes production of homogenized condensed fish.

from domestically-caught fish made up 86 percent of the January 1962 supply.



Michigan

COMMERCIAL FISHERY LANDINGS FROM GREAT LAKES WATERS, 1961:

Michigan commercial fishermen caught nearly 24 million pounds of fish from Great Lakes waters in 1961, a drop of about one million pounds from 1960. The 1961 catch at ex-vessel was valued at \$2,900,000, approximately \$97,000 less than in 1960 but only \$10,000 shy of the annual 40-year average. The amount of the 1961 catch was down roughly 2 million pounds from the yearly average for 1920 through 1960.



Lake herring, chubs, carp, and yellow perch made up 77 percent of the total in 1961: lake herring, 7,295,000 pounds; chubs, 6,321,000; carp, 2,718,000; and yellow perch, 2,183,800 pounds.

The Lake trout catch, once an important part of Michigan's Great Lakes total, slumped to a new low of 214,500 pounds with the bulk coming from Lake Superior. From 1920 through 1944, the State's commercial fishermen consistently took 5 to 6 million pounds of lake trout each year. Since then, their take has steadily waned with sealamprey predation leaving but a small remnant of the lake trout fishery.

Whitefish populations have suffered a similar fate in the Great Lakes as reflected by 1961 catches. Only 901,600 pounds of whitefish were taken by Michigan's commercial fishermen in 1961, the seventh-lowest catch on record.

The 1961 commercial smelt catch was the lowest since 1950, nearly 1,400,000 pounds.

Michigan's 1961 catches by waters were: Lake Michigan, 4,328,000 pounds; Green Bay, 2,908,300; Lake Superior, 8,060,200; Lake Huron, 3,578,850; Saginaw Bay, 3,178,900; and Lake Erie, 1,921,340 pounds.

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Nets

SYNTHETIC NET WEBBING OFFERS LESS RESISTANCE WHEN TOWED:

Various net materials with approximately equal wet-knot strengths were used for manufacturing net webbing of equal mesh size (110 mm. mesh opening) and towed in a tank for testing ship models. The webbings were stretched on a 1 m² frame. The thinner net materials made of synthetic fibers showed a lower resistance than Manila, and the frequently expressed opinion that plaited threads have a greater towing resistance than twisted ones was found incorrect. With greater towing speed, plaited Perlon showed a lower resistance than the twisted Perlon and a still lower one than Manila. (*Deutsche Seiler-Zeitung*, vol. 79, no. 3, 1960.)



North Atlantic Fisheries

Exploration and Gear Research

TRAWL INSTRUMENTATION SYSTEM TESTED:

M/V "Delaware" Cruise 62-2 (February 28-March 9, 1962): Testing and evaluation trials of a trawl instrumentation system for taking various measurements on otter trawl and other nets while in operation were conducted aboard the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware during this cruise.

The system is comprised of several experimental devices designed primarily to take measurements of the spread between otter boards, between trawl wing ends, between the headrope and footrope, to measure the depth of the trawl, the temperature of the water, and to tell whether or not the trawl is in contact with the bottom.

The spread distances are measured by means of lengths of wire stretched between the respective points and held under tension on spring-driven reels. Data on the amount of wire run off the reel is transmitted electronically back to the vessel where it is recorded as a line of dots on a moving tape. Data from a pressure-operated potentiometer indicating depth and from a temperature transducer are similarly transmitted to the vessel and recorded. A magnetically operated switch indicates bottom contact by

illumination of a light on the shipboard recorder panel. The various data are transmitted to the vessel through 9 electrical conductors contained in the core of the trawl warp.

The distance measuring instruments and the bottom contact switch were found to function approximately as designed. The temperature and depth devices apparently have electronic "bugs" in either the transmission or recording system that have yet to be worked out. Some difficulty was also experienced with the conductor-cable trawl warp.

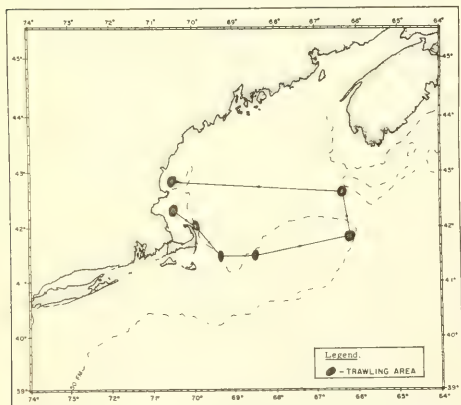
Work on the system will be continued aboard the 65-foot Rorqual to remedy the deficiencies in the devices before continuation of trials on the 148-foot Delaware.



North Atlantic Fisheries Investigations

BLOOD SAMPLES COLLECTED FROM GROUNDFISH:

M/V "Delaware" Cruise 62-3 (March 15-22, 1962): A blood type or a serological survey of haddock and other groundfish at various geographically separate areas off the New England coast was the purpose of this cruise of the research vessel Delaware of the U. S. Bureau of Commercial Fisheries. The vessel, which sailed from Gloucester, Mass., on March 15 and returned on March

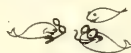


Cruise of the research vessel Delaware March 15-22, 1962, to collect samples of blood from groundfish off the New England coast.

22, 1962, covered Massachusetts Bay, Nauset, Ipswich Bay, Georges Bank, and Browns Bank.

At 7 stations, 21 drags were made for haddock and other groundfish. Samples of blood were taken from haddock, cod, red hake, white hake, cusk, wolffish, halibut, and other species of groundfish. Biological information collected included: frozen whole haddock for fecundity studies; cod otoliths, scales, and measurements; frozen miscellaneous species for aquarium models; and samples of cod blood for genetic studies. There were 27 bathythermograph records taken and 27 sets of sea bed drifters released throughout the cruise.

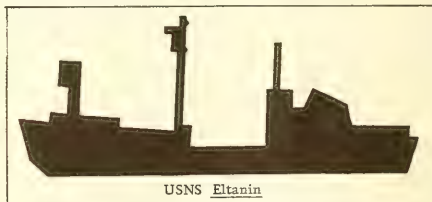
Serological sampling was possible aboard ship but extensive testing and evaluation remains to be completed.



Oceanography

NEWEST AND LARGEST UNITED STATES OCEANOGRAPHIC RESEARCH VESSEL:

The newest and largest (in tonnage) United States oceanographic research vessel, the Eltanin, made an official visit to Washington, D. C., the week of February 6, 1962. The vessel was open for inspection and scientists and representatives of government were able to see one of our Nation's best equipped and most versatile research vessels.



The conversion of the Eltanin was completed late in 1961. She was formerly a cargo ship, with a raked icebreaker-form bow and a modified cruiser stern. With a length of 266 feet and full load displacement of 3,886 tons, the Eltanin will accommodate about 32 scientists and technicians and a 47-man civilian crew of the U. S. Navy's Military Sea Transportation Service (MSTS). The numerous laboratories aboard the vessel are spacious and well equipped, and quarters for the scientists and crew are very comfortable.

The Eltanin is really a full Antarctic re-search station, but afloat instead of land-based. She will be equipped not only for physical oceanography and marine biology studies, but also for atmospheric physics research, submarine geology, and meteorology. She will enable scientists to do research in areas of the world that have scarcely been explored, let alone studied scientifically.

After a short shake-down cruise, the Eltanin was expected to steam south to the Antarctic to make a series of traverses, crossing and recrossing the Antarctic convergence. Numerous universities and private corporations will conduct studies covering many fields. Included are: University of Southern California will study fundamental biological characteristics of the southern oceans; Columbia University will study plankton and nutritional factors of the area; Lamont Geological Observatory will study the ocean currents; Texas Instruments Inc. will operate the deep-sea winch, run the electronics and machine shops, and make routine oceanographic observations. (National Oceanographic Data Center Newsletter, February 28, 1962.)



Oregon

FISH COMMISSION ANNOUNCES RESEARCH AGREEMENT WITH ATOMIC ENERGY COMMISSION:

The Oregon Fish Commission has entered into a contract agreement with the U. S. Atomic Energy Commission (AEC) to study the offshore-inshore exchange of bottom fish stocks off northern Oregon and southern Washington, the Commission's Director of Research announced on March 13, 1962.

A total of \$11,000 has been given the Commission to initiate the first year of study. Objectives for the first year's operation are an intensive tagging and tag-recovery program. The Principal Investigator will be the Senior Biologist at the Commission's Astoria Laboratory.

Bottom fish taken by the U. S. Bureau of Commercial Fisheries research vessels during marine ecological studies under a similar AEC contract will be tagged and released in the study area off the Columbia River at depths of 100 to 1,000 fathoms. The Oregon

commercial trawl landings at Astoria, Newport, Coos Bay, and other ports to the north and south are to be closely monitored for tagged fish. Based on past experience, the bulk of recovered fish, if any, will appear in catches of Oregon trawlers since these vessels predominate in the area.

The principal species expected to be tagged are Dover sole and black cod or sablefish. Only species found in abundance will be tagged to enhance the likelihood of a maximum number of recoveries for analysis.

"Possible duration of this study will be six years," stated the Director of Research. He pointed out that sufficient time is necessary to obtain adequate recoveries and other information from tagging, and the study could cover a ten-year period if conditions warrant the additional time. Dover sole and sablefish are both long-lived animals and appreciable numbers of tag recoveries can be expected for at least five years after tagging.

* * * * *

NEW CRAB-TAGGING METHOD USED:

A new technique in Dungeness crab tagging has been introduced by Oregon Fish Commission biologists and early this year was being tested at the Commission's Newport Laboratory on Yaquina Bay. The head of shellfish investigations expects the new method to far surpass previous tagging attempts. Successful tests were made under aquarium conditions before beginning tagging operations.



Tagging and measuring crabs.

Crabs are a particularly difficult animal to study with respect to age determination and growth rate. Crabs shed their shells one or more times annually and carry no age-determination structure within their body, thereby making tagging the only method available for growth determination and migration-habitats.

Previously, crabs have been marked by several different methods, including fingernail polish and metal tags attached to the shell, but success was poor because of the shedded shells.

A splitting-line method using nylon dart and spaghetti tags is now being used. An insertion point on the crab's body has been found that will keep the tag with the crab through several successive sheddings, thus making it possible to study growth, migration, and distribution with a far greater degree of accuracy.

If fishermen return the tagged crabs back into the sea, it would aid the biologists greatly with the study. "We know the crabs are well distributed and surviving from tags we have received," said the head of the Commission's shellfish investigations, "and the public could do us a great favor if they would release these tagged specimens unharmed when captured." By doing this, greater numbers of samples will be available when the study begins in June 1962, and through these studies the best possible management of the resource can be obtained.

POND-REARED SILVER SALMON RELEASED:

"We have just completed our most successful year in pond-rearing silver salmon," observed Oregon's Fish Commission Assistant Director of Hatcheries on March 14, 1962. Over 420,000 yearling silvers were released from the Fish Commission-Weyerhaeuser Company's cooperative Millicoma Pond, an eight-acre impoundment on the East Fork of the Millicoma River, 25 miles east of Coos Bay.

The young fish were put into the pond in May 1961, and were fed the Oregon moist pellet diet for the following ten months. An original plant of 588,000 fingerlings was made, and the release figures show a 72 percent survival for the yearlings, now 5 to 6 inches in length. The release last year of 82,000 silvers, and 78,000 in 1960 were from smaller plants into the pond.

The Assistant Director also pointed out that 75,000 of those fish were hauled from the pond by liberation truck to the upper South Coos River tributaries, namely Williams and Tioga Creeks, and released there. Since removal of splash dams on that river, the Fish Commission has annually released salmon there so they can return as adults and spawn naturally. "This," said the Assistant Director, "is one more step forward in our program to help restore the once abundant silver salmon."

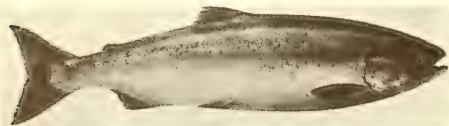
The remaining fish were released directly into the East Fork of the Millicoma River from the pond. The fish were in excellent condition. Some of the young fish will spend only 7 to 8 months in the ocean and return as jacks this fall, while those that survive another year will return as adults in the fall of 1963.

Eggs to perpetuate this pond-rearing project are taken at a fish rack located on the East Fork of the Millicoma, downstream from the pond. A limited number of adults are trapped and the rest allowed to move upstream to spawn naturally. There are 500,000 fingerlings available for planting into the pond to begin the fourth year of operation.

It is anticipated that this large release of yearling silvers could make a substantial contribution to the salmon fishery in the Coos Bay area in 1963.

THREE MILLION SPRING CHINOOK SALMON RELEASED:

The season's release of over three million yearling spring chinook salmon into Oregon's waters, mostly into streams of the Willamette drainage system, was completed in early March 1962, the Oregon Fish Commission's Director of Fish Culture reported on March 12. Spring chinook liberations began in late November 1961 and were completed for the season with a final release by



Silver Salmon (*Oncorhynchus kisutch*)

the Fish Commission of 193,000 yearlings into the North Santiam River during the week of March 4-10, 1962.

In commenting on the excellent physical condition of the fish liberated, the Director gave much credit to the Commission's program of feeding pasteurized "starter" diet and the Oregon moist pellet, a nutritionally complete fish ration developed cooperatively by the Fish Commission and Oregon State University specialists.

* * * * *

SPLASH DAM REMOVAL OPENS NEW SALMON SPAWNING AREA:

The blasting of a 20-foot high, 150-foot long, and 50-foot wide splash dam by Oregon Fish Commission personnel opened up 10 miles of new spawning area for silver salmon and steelhead on the Luckiamute River near Valsetz, the Director of Engineering announced on March 13, 1962.

The dam, built in 1903 to provide log storage, had not been used for that purpose in nearly 40 years. Debris had backed up behind the timbered structure for over 300 feet and was 20 feet deep in some places.

Two 10-case charges of dynamite were required to loosen debris and create a channel through the dam face so clearance work could begin. The Director stated that nature would provide some of the stream cleaning with the advent of spring rains and high waters, but that it was first necessary to break up several jams behind the dam so they could be hauled or flushed out. Chain saws and dynamite were employed to loosen and remove much of the accumulated material, with most of the large logs and a major portion of the jam taken out.

The three wooden structural abutments have now been completely removed, and for the first time in 60 years the stream is flowing in its normal channel. This is just one of the many stream clearance projects the Fish Commission is engaged in to provide new spawning areas for the anadromous fish of the State. "Stream clearance is not the only solution to maintaining runs of fish," said the Director, "but by cleaning up and restoring these streams to their natural state, we can establish new runs and enhance existing productivity."

ULO

Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS, FEBRUARY 1962:

Item and Period	1962	1961	1960	1959	1958
. . . . (1,000 Lbs., all heads-off)					
Total Landings, So. Atl. and Gulf States:					
April	-	3,169	4,729	3,595	5,300
March	-	4,814	4,098	2,950	4,774
February	3,800	3,911	3,785	3,227	4,007
January	3,920	5,677	5,401	4,310	5,254
Jan.-Dec.	-	91,000	141,035	130,659	116,552
Quantity canned, Gulf States 1/:					
April	-	10	72	81	306
March	-	38	128	93	36
February	236	98	223	135	52
January	470	199	289	308	146
Jan.-Dec.	-	15,760	28,594	24,679	26,404
Frozen inventories (as of end of each mo.) 2/:					
April 30	-	27,492	20,502	23,331	12,211
March 31	-	31,345	23,232	24,893	14,501
February 28	18,874	37,612	29,063	27,555	16,359
January 31	21,328	37,842	34,332	30,858	17,963
Imports 3/:					
April	-	9,208	7,733	9,051	5,446
March	-	10,347	8,545	8,492	4,986
February	4/	8,932	7,657	7,481	4,466
January	12,907	12,338	8,596	8,238	5,696
Jan.-Dec.	-	126,282	113,418	106,555	85,393
1/Pounds of headless shrimp determined by multiplying the number of standard cases by 33.					
2/Raw headless only; excludes breaded, peeled and deveined, etc.					
3/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.					
4/Not available.					

Note: See Commercial Fisheries Review, March 1962 p. 38.

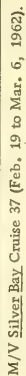


South Atlantic

Exploratory Fishery Program

EXPLORATORY FISHING FOR ROYAL-RED SHRIMP CONTINUED:

M/V "Silver Bay" Cruise 37 (February 19-March 6, 1962): To assist commercial fishermen initiating deep-water shrimp trawling and to assess the availability of deep-water royal-red shrimp (*Hymenopenaeus robustus*) between St. Augustine and Savannah were the principal objectives of the 16-day cruise of the exploratory fishing ves-

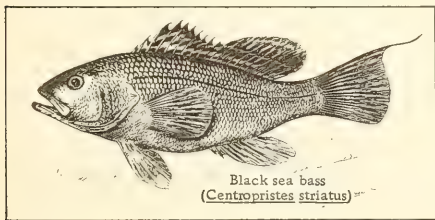


sel Silver Bay of the U. S. Bureau of Commercial Fisheries. The vessel returned to Brunswick, Ga., on March 6, 1962.

Trawling for royal-red shrimp was conducted off St. Augustine in conjunction with 7 area shrimp trawler. Catch rates of all vessels, including the Silver Bay, were generally comparable. Conventionally-rigged 70-foot 4-seam flat trawls with tickler chains and 8 ft. x 40 in. chain doors were used aboard the Silver Bay and produced catches ranging up to 200 pounds of heads-off shrimp per 2-hour drag, averaging about 100 pounds.

Snapper trawling explorations were conducted in the 19-21 fathom depth range between Jacksonville Beach and Matanzas Inlet, and in the 30-40 fathom depth range east southeast of the Savannah Lightship. An 80-100 foot roller-rigged 2-seam $4\frac{1}{2}$ inch mesh nylon fish trawl with funnel flapper and 10-foot bracket doors was fished in conjunction with "white line" depth recorder tracings. Gear damage was negligible.

Catches of mixed fish were found off Florida with vermilion snapper (Rhomboplites aurorubens), red snapper (Lutjanus blackfordi), grey snapper (Lutjanus griseus), yellowtail snapper (Ocyurus chrysurus), grouper (Mycteroperca and Epinephelus), red and white porgy (Pagrus and Calamus), black sea bass (Centropristes striatus), grey triggerfish (Balistes capricus), and grunt (Haemulon aurolineatum) predominating. Large red snapper were present at stations in amounts ranging from 40-200 pounds per drag. Small to large (5-16 inches) vermilion snapper were also taken at all stations and ranged up to 1,400 pounds per drag. Maximum catches of other species on a per drag basis were as follows: grey snapper, 200 lbs.; yellowtail snapper, 80 lbs.; grouper, 110 lbs.; red porgy, 840 lbs.; white porgy, 240 lbs.; black sea bass, 174 lbs.; grey triggerfish, 408 lbs.; and grunt 315 lbs.



Black sea bass
(Centropristes striatus)

Three drags off Georgia produced similar catches with maximum amounts on a per drag basis as follows: red snapper, 47 lbs.; vermilion snapper, 220 lbs.; grouper, 165 lbs.; black sea bass, 140 lbs.; and red porgy, 450 lbs.

Bottom topography in this area varied from smooth to slightly broken.

Note: See Commercial Fisheries Review, April 1962 p. 26.



South Carolina

FISHERIES BIOLOGICAL RESEARCH PROGRESS, JANUARY-MARCH 1962:

The following is a report on the progress of biological research by the Bears Bluff Laboratories, Wadmalaw Island, S. C., for January-March 1962.

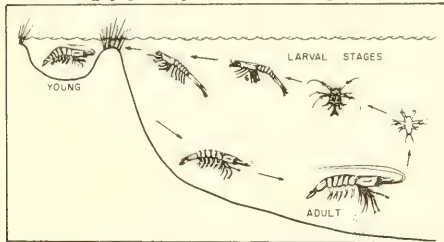
Oyster Research: The greater portion of the efforts during the first quarter have been on the management of the oyster fishery in the North and South Santee Rivers. The area contains most of South Carolina's deep-water oyster beds. For many years it has been considered polluted and closed to oyster harvesting. At the request of commercial oystermen, the State Health Department re-examined the area, and after a hearing in February the area was declared open for oyster harvesting.

Under State law these deep-water oyster beds are not subject to lease, but the harvesting of oysters therefrom could be controlled by the Division of Commercial Fisheries. The Division decided that for conservation some sort of quota system would be necessary. Consequently, Bears Bluff personnel made a survey of the area, mapping and sampling it to determine the quantity and quality of oysters available. The surveys showed that there were approximately 389 acres of actual oyster beds with a harvestable population of large (more than 3-inch in length) oysters of about 90,000 bushels (South Carolina measure) or 170,000 U. S. standard bushels.

The State's Division of Commercial Fisheries then issued permits to recognized oystermen with quotas fixed so as not to deplete the oysters. Two fairly extensive surveys and additional spot checks have been made in the Santee area to determine the extent of

harvesting. Towards the end of March it appeared that three areas of approximately $7\frac{1}{2}$ acres are reaching depletion of marketable oysters, and Bears Bluff Laboratories will recommend to the Division that these areas be closed until next year. The remaining oyster grounds still can be harvested.

Shrimp Research: Postlarval brown shrimp began to appear in experimental plankton tows during the first week of February. The postlarvae reached peak numbers during February 23 to March 9, and were continuing to enter inside waters in some numbers as late as March 30. Although no great abundance was evident this year, brown shrimp have been approximately three times as plentiful as in 1961, which was an exceedingly poor year for that species.



Life cycle of shrimp. Spawning in the ocean, the larvae (here greatly magnified) migrate to inshore nursery areas. As the shrimp grow, they return to sea where they support the most valuable of our commercial fisheries.

Although the abundance of brown shrimp larvae this year did not approach that of 1960, it should be pointed out that during that year a cold spell, which occurred when postlarvae were at maximum numbers, probably resulted in a high mortality. For this reason no comparison of the commercial prospects for brown shrimp, based on abundance of postlarvae during these two years, should be made. It can be said, however, that the outlook for the commercial catch of brown shrimp this coming June and July is considerably better than at this time in 1961, even though the catch may still be below average.

Fish Research: Postlarval spot were quite plentiful in plankton tows during this quarter, being only slightly less numerous than in 1961. This would indicate another successful spawning and continued abundance for this species. Flounders also appear to have had a successful spawning this winter,

as flounder larvae were about twice as plentiful in plankton tows as in 1961.

Experimental otter-trawling at regular stations continued on schedule throughout this quarter. Survey stations now extend from Price Creek, which is north of Charleston, to Calibogue Sound near the Georgia line. Both croaker and spot showed considerable increases in abundance in the first quarter of this year as compared with 1961. Croaker were almost nine times as numerous and spot were about twice as plentiful as last year. White shrimp were also more abundant during the quarter than in the same period of 1961, being about 1.8 times as numerous at regular stations.

Pond Cultivation: Experimental work to determine the possibility of stocking shrimp ponds with large volume irrigation pumps was continued during the quarter. A six-inch irrigation pump was used to pump approximately 3.5 million gallons of water from a nearby tidal creek into a one-acre experimental pond during February 12 to March 30. The pond had been drained and closed off completely on February 9, and pumping was begun as soon as postlarval brown shrimp began to appear in sufficient numbers. Surface water was allowed to flow off through the pond's overflow pipes during pumping operations.

During the same period a pond of equal size was opened and allowed to take in water naturally on the flood tides, for comparison of results of the two methods of stocking postlarval shrimp. It was estimated that about ten million gallons of water entered the pond during the stocking period.

These experiments were set up to determine whether or not stocking postlarval shrimp by pumping is as practical as the natural flooding method. The advantages of the pumping method are that water can be taken from a lower level in the creek and at an earlier stage of the tide, since the gates of the ponds are at such a level that water can enter the ponds naturally only on high flood tide. On the other hand, stocking by natural flooding is economical and convenient, and a greater volume of water per hour can be taken into a pond. The results of these experiments will be known later this year when the two ponds

are drained and harvested, and a comparison of results is made.

Note: See Commercial Fisheries Review, February 1962 p. 40.



Tuna

ANOTHER TAGGED BLUEFIN SWIMS ACROSS NORTH ATLANTIC OCEAN:

A second four-months crossing of the North Atlantic Ocean by a tagged giant bluefin tuna has been reported to the research associate in charge of the tagging program at the Woods Hole Oceanographic Institution, according to a December 11, 1961, news release from the Institution.

As in the first crossing, reported about a month earlier, the fish was tagged near Cat Cay in the Bahamas and was recovered near Bergen, Norway--more than 4,500 miles away. The elapsed times for the crossings were almost identical: the first fish was tagged on June 10 and the tag was recovered on October 6, 1961--118 days later; the second was tagged June 1 and recovered September 28, 1961--a period of 119 days.

Both fish were tagged by two sport fishermen participating in the tagging program: the owner, from Wilmington, Del., and the skipper, from Fort Lauderdale, Fla., of the sportfishing boat Caliban II. Both tagged fish were caught by Norwegian commercial seiners. However, in the first case the tag was found loose on the dock; in the second case the tag was still in the fish, which weighed 484 pounds. Its weight when tagged was estimated at 500 pounds.

The scientist of the Norwegian Institute of Marine Research in Bergen, who reported both recoveries, wrote that the tagged fish was of a variety known to fishermen as "long-tailed" bluefin because it is thinner than normal. Some years the tuna catches late in the season include such fish, which have previously been regarded as individuals that failed in the struggle for food. However, the Norwegian Institute scientist suggested, the tag recovery might mean that the lean condition of the fish was a result of having made the long transatlantic crossing during the feeding season.

The research associate of the Woods Hole Oceanographic Institution said that more tag-

ging of giant tuna may lead to new recoveries which will help evaluate the theory of the Norwegian scientist. Of more than 1,000 tagged bluefin tuna, fewer than 100 have been giants, weighing over 300 pounds. Of those, 89 were tagged by the sportfishing boat Caliban II.

Note: See Commercial Fisheries Review, February 1962 p. 42.

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CALIFORNIA EX-VESSEL PRICES INCREASED:

Ex-vessel prices paid for domestic-caught tuna landed at San Diego and San Pedro, Calif., were increased by \$10 per ton for bluefin, skipjack, and yellowfin tuna. Effective March 22, 1962, the new prices per ton are: bluefin, \$300, skipjack \$270, and yellowfin \$310, round weight basis, at cannery docks. The new prices were established as a result of negotiations between tuna cannery and vessel owners in California.

This marks the sixth round of increases, each by \$10 per ton, since July 1, 1961. The most recent previous increase was on January 2, 1962, for skipjack and yellowfin tuna, and on March 9, for bluefin. Ex-vessel prices a year earlier per ton were: bluefin \$240, skipjack \$210, and yellowfin \$250.



U. S. Fishing Vessels

FIRST CONSTRUCTION SUBSIDY APPROVED:

Approval of the first construction differential subsidy contract for building a United States fishing vessel, as authorized by a Federal law passed in 1960 (P.L. 86-516), was announced on March 21, 1962, by the Assistant Secretary of the Interior for Fish and Wildlife.

Under the contract, the U. S. Bureau of Commercial Fisheries will pay \$37,233, or one-third the cost of a new \$117,700 otter trawler to be built by Harvey F. Gamage of South Bristol, Me., for Thomas E. Larsen of New Bedford, Mass.

To be eligible for a subsidy, a vessel must be designed to operate in a fishery which has received a finding of injury because of increased imports. At present, the New England groundfish fishery is the

only one meeting this requirement. The amount of subsidy that can be granted is that equal to the difference between the cost of construction in a domestic shipyard and in a foreign shipyard, with a maximum limitation of $33\frac{1}{3}$ percent of the domestic construction cost.

Note: See Commercial Fisheries Review, June 1961 p. 22, November 1960 p. 91.

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FISHERIES LOAN FUND LOANS AND OTHER FINANCIAL AID FOR VESSELS, JAN. 1-MAR. 31, 1962:

From the beginning of the program in 1956 through March 31, 1962, a total of 1,133 applications for \$32,337,147 have been received by the U. S. Bureau of Commercial Fisheries, the agency administering the Federal Fisheries Loan Fund. Of the total 595 applications (\$14,120,911) have been approved, 389 (\$10,020,504) have been declined or found ineligible, 113 (\$5,546,262) have been withdrawn by applicants before being processed, and 36 (\$1,054,756) are pending. Of the applications approved, 235 (\$1,594,714) were approved for amounts less than applied for.

The following loans were approved from January 1, 1962, through March 31, 1962:

New England Area: Frank H. Thompson, Addison, Maine, \$2,250; Alger F. Burgess, Chebeague Island, Maine, \$3,500; Ora M. Hunt, Plymouth, Mass., \$5,000.

South Atlantic and Gulf Area: Herbert M. Storter, Naples, Fla., \$27,700; Kyle Collins & G. Cecil Hartley, Tampa, Fla., \$23,000; Cleveland D. Scarborough, Mt. Pleasant, S. C., \$7,970; Louis E. Williams, Mt. Pleasant, S. C., \$9,500; Eugene M. Webster and W. H. Rayburn, Aransas Pass, Tex., \$17,650; Oris A. Smith, Brownsville, Tex., \$19,000; Hollis M. Forrester, Lake Jackson, Tex., \$40,000; Jaquin Ceramie & Hubert Lafont Shrimp Co., Golden Meadow, La., \$14,510; Ellis Plaisance, Jr. & Hubert Lafont Shrimp Co., Golden Meadow, La., \$15,220; Harold J. Callais, Cut Off, La., \$13,225; Clinton P. Guidry, Lafitte, La., \$15,780; G. A. Rogers & M. H. Plaisance, Westwego, La., \$18,750; Norman C. Ronquille, Westwego, La., \$17,220.

California: James N. Blum, Eureka, \$7,377; J. V. Shaw, Salinas, \$9,000; Terence S. Hamidge, San Diego, \$3,870; Mitchell M. Tyler, San Diego, \$9,990; Russel E. Moody, Vallejo, \$3,000.

Pacific Northwest Area: Norman Fuller, Forks, Wash., \$3,500; Francis E. Caldwell, Port Orchard, Wash., \$4,800; Ray G. Knowles, Tacoma, Wash., \$2,200; Robert M. Edemso, Seattle, Wash., \$5,360; George M. Jensen, Seattle, Wash., \$7,000; Richard E. Rydman, Westport, Wash., \$20,000; Ronald W. Stedman, Westport, Wash., \$11,000.

Alaska: Clancy V. Henkins, Douglas, \$13,300; Everett J. Buchanan, Juneau, \$3,000; Jack E. Crowley, Juneau, \$11,500; Philip C. Hoffman, Ketchikan, \$2,800; George H. Johnson, Seldovia, \$12,000; Trawlers, Inc., Seward, \$34,000; Winston E. Davies, Wrangell, \$2,500.

In the Fishing Vessel Mortgage Insurance Program, also administered by the Bureau, approval has been granted for the insurance of mortgages for the following fishing vessels during the last quarter of 1961 and the first quarter of 1962: Big Baby, Inc., Tampa, Fla., \$38,560; Thomas B. Larsen, New Bedford, Mass., \$40,000; Victoria Fishing Co., New Bedford, Mass., \$71,250. The first fishing vessel mortgage was insured in January 1961. Under the mortgage insurance program, the Department of the Interior guarantees the lender or mortgage holder the insured amount. Should the borrower fail to pay,

the Department pays but has legal recourse to the borrower's assets.

In the Construction Differential Subsidy Program, the following construction differential subsidy was approved in March 1961: Thomas B. Larsen, New Bedford, Mass., \$34,667. This was the first approval in this program. The amount approved for subsidy represents one-third the cost of a new vessel.

Note: See Commercial Fisheries Review, February 1962 pp. 20, 46.

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CONTRACT TO DESIGN AND BUILD SEMIAUTOMATED STERN TRAWLER-PURSE SEINER:

The first United States effort to adopt the stern trawling technique was announced early this year by a group of Rhode Islanders. A contract was awarded late in January 1962 to a firm of naval architects and builders of steel vessels of Warren, R.I., to design and build a 76-foot semiautomated dragger capable of being easily converted to purse seining.



Fig. 1 - New 76-foot semiautomated stern trawler-purse seiner rigged for stern trawling.

The vessel will be built for a new Rhode Island company to be associated with the Warren, R.I., firm. The new firm is headed by a group of business and civic leaders who have taken the challenge to develop a more productive fishing vessel in an effort to surpass that of foreign countries now fishing off the New England coast. The vessel is scheduled to be launched in late summer 1962.

Prime feature of the new design will be an advanced "over the stern" net-handling system which will speed net hauling and reduce hazards to the crew. Use of the European stern ramp will make fishing easier in bad weather, allowing more consistent catches and a shorter work week for fishermen.

"Stern trawlers of larger size, but not as advanced in automation, are now being operated by the Russians off our coasts. These trawlers, most of them built in Poland, are able to haul their nets in half the time required by United States side trawlers which have to circle an area to haul their nets and then undergo a complicated method of disconnecting fishing gear in order to get the loaded net aboard," stated the President of the group designing and building the new vessel.

The new European stern trawlers haul their nets through a stern ramp. Though faster than existing United States

**PRINCIPAL CHARACTERISTICS OF
SEMI-AUTOMATED STERN DRAGGER-PURSE SEINER**

DIMENSIONS: Length over-all 76'0"; molded beam 21'6"; light draft 8'0".

RIG: Stern trawler, pilothouse control of trawling cable positioning and net hauling over stern; fitted with conventional European-type ramp.

PROPULSION (Main): Stern drive 340 horsepower Diesel, driving 60-inch 3-blade controllable pitch propeller developing 10,400-pound thrust. Propeller driven through 12-inch gear belt, 5:1 reduction, engine tandem mounted in after peak. Engine power take-off connected by gear belt to deck winch and also to auxiliary water jet propulsion unit, controlled from pilot house.

AUXILIARY POWER: 160 horsepower deck mounted Diesel driving deck winch through torque converter. Also connected to water jet propulsion unit, pilot house controlled.

RANGE: 5,000 miles; will be capable of fishing from Grand Banks to Central American Pacific areas.

WINCH: 30" drum capacity of 1,000 fathoms of 5/8" wire, with pneumatic controls, semiautomatic level winder and hydraulic brake to be installed on the winch by Blount. Control will be from cab located at after end of pilot house overlooking entire working deck.

FISH HOLD: Total 3,500 cu. ft., 220,000 pounds of fish and ice. Vultafoam insulated, sheathed in fiberglass, metal bottom.

FISH COOLING: Optional ice or mechanically-refrigerated salt-water mist spray.

QUARTERS: Four staterooms, each containing 2 bunks, master stateroom, and centralized modern galley, built in modern domestic style.

vessels, they use the standard net-strapping method. The new automated dragger will eliminate strapping and will automatically bring in the catch clear of the stern and onto the deck.

The new vessel will be a combination stern trawler and purse-seiner in order for it to take advantage of whichever type of fishing is most profitable, thus assuring peak production throughout the whole year. It will be convertible to either method of fishing in less than a day.

Development of the new dragger continues the program of the Warren, R.I., firm of naval architects and shipbuilders to construct a series of experimental fishing vessels, including the highly successful 65-foot Atlantic tuna clipper built for a Cape Cod firm in 1961.

Only since the successful adaptation of the Warren, R.I., firm's stern drive, as on the tuna clipper, has it been possible to design a vessel combining needs of both dragger and purse-seiner: large fish hold clear of shafting, with the ability to take heavy loads in good trim and handle a mile of cable.

As a dragger the new vessel will handle 1,000 fathoms of trawl cable and be capable of trawling in water as deep as 1,200 feet on the outer edge of the Continental Shelf. It will fish initially for deep-sea lobsters. Its stern-hauled net-handling rig will land the net with greater safety to the lobsters, increasing their life in captivity and allowing them to be brought to market in fresher condition. It will also have the latest equipment for holding the lobsters.

In late spring and summer, when the offshore lobsters are shedding, the vessel will be used as a purse seiner

and fish for menhaden and tuna. Because of its refrigeration system, it will be able to range for tuna up to 150 miles off the coast.

Among its features is a 60-inch controllable pitch propeller developing a thrust in excess of 10,000 pounds and a water jet auxiliary propulsion system designed to be an aid in regulating position while pursuing the net. The main engine, as well as the auxiliary engine, at the option of the skipper, will be capable of driving a water jet propulsion unit located in the stern. Either engine can thus propel the boat in any direction.



Fig. 2 - New stern trawler-purse seiner rigged for seining.

There will be individual staterooms for the crew, one of the first United States-rigged vessels to be so equipped.

The vessel will carry a standard size crew and if a contemplated processing plant is located in the Rhode Island area, there will be an increase of 5 to 10 additional shore jobs. The decision to build and operate a processing plant in Rhode Island to fit fishing operations will be considered when the boat has successfully met her designer's requirements.

One of the great hopes of the designer is that its bad weather fishing ability may lead to a five-day work week for the fishermen. More efficient deck gear plus more speed to and from the fishing grounds may allow this.

"At stake also is the ability of American private enterprise to face up to a harsh competition right under our noses," the President of the Warren, R.I., firm said. "We will never out-distance the foreign fleets on our fishing grounds, without new designs and developments."

* * * * *

**DOCUMENTATIONS ISSUED AND
CANCELLED, FEBRUARY 1962:**

During February 1962, a total of 15 vessels of 5 net tons and over were issued first documents as fishing craft in the United States as compared with 21 in February 1961. Also, there were 4 more documents cancelled for fishing vessels in February 1962 than in the same month in 1961.

Table 1 - U. S. Fishing Vessels 1/--Documents Issued and Cancelled, by Areas, February 1962 with Comparisons

Area (Home Port)	Feb.		Jan.-Feb.		Total
	1962	1961	1962	1961	1961
.....(Number).....					
<u>Issued first documents 2/</u>					
New England	-	4	2	7	33
Middle Atlantic	-	-	-	-	12
Chesapeake	2	1	6	4	75
South Atlantic	2	2	4	3	44
Gulf	5	7	15	18	103
Pacific	6	4	12	9	149
Great Lakes	-	1	-	1	12
Puerto Rico	-	2	-	2	2
Total	15	21	39	44	430
<u>Removed from documentation 3/</u>					
New England	3	2	5	3	20
Middle Atlantic	1	-	9	2	32
Chesapeake	1	2	3	8	28
South Atlantic	4	-	7	5	29
Gulf	6	11	19	17	104
Pacific	11	8	27	17	111
Great Lakes	1	-	6	2	17
Hawaii	-	-	1	-	-
Total	27	23	77	54	341

Note: See table 2.

Table 2 - U. S. Fishing Vessels 1/--Documents Issued and Cancelled, by Tonnage Groups, February 1962

Gross Tonnage	Issued 2/	Cancelled 3/
.....(Number).....		
5-9	2	3
10-19	6	13
20-29	1	1
30-39	-	4
40-49	1	-
50-59	-	2
60-69	1	1
70-79	4	-
100-109	-	1
120-129	-	1
310-319	-	1
Total	15	27

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

2/Includes redocumented vessels previously removed from records. Vessels issued first documents as fishing craft were built: 10 in 1962, 2 in 1961, and 3 prior to 1961. Assigned to areas on the basis of their home ports.

3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS,
JANUARY 1962:

Imports of fresh, frozen, and processed edible fish and shellfish into the United States in January 1962 were up 1.8 percent in quantity and 2.9 percent in value as compared with December 1961. The increase was due primarily to more imports of frozen fillets (groundfish and other types), canned sardines in oil, canned salmon, and fresh and frozen sea scallops. The increases were almost offset by a drop in the imports of all types of canned and frozen tuna, frozen salmon, canned sardines not in oil, frozen frog legs, and frozen shrimp.

Compared with the same month in 1961, imports in January 1962 were up 4.6 percent in quantity and 22.0 percent in value. The increase in value was due to the higher prices for nearly all imported fishery products. The general increase came about because of more imports of fillets other than groundfish (including swordfish, halibut, and salmon), frozen tuna other than albacore, tuna loins and discs, canned tuna in brine, canned sardines in oil, canned crab meat, frozen spiny lobsters, live lobsters from Canada, and frozen sea scallops (from Canada). The increases were offset somewhat by declines in the imports of groundfish fillets (especially blocks and slabs), frozen albacore, frozen salmon from Canada, canned sardines not in oil, and frozen frog legs.

In 1961 the imports of fresh, frozen, and processed edible fish and shellfish were up 1.6 percent from the 1,010.4 million pounds reported in the previous year. The value of the imports was up 9.4 percent from the \$304.8 reported in 1960. Higher prices for many imported fishery products in 1961 accounted for most of the increase in value. Imports in 1961 were greater for all types of frozen fillets (including halibut, salmon, and swordfish), frozen albacore tuna, tuna loins and discs, canned tuna in brine, canned sardines in oil and not in oil, frozen shrimp, and fresh and frozen scallops from Canada. The failure of the sardine fisheries in California and Maine was responsible for the increase in canned sardine imports. Offsetting the increases, were less imports of frozen tuna other than albacore (principally yellowfin), frozen salmon from Canada, canned salmon from Japan, and frog legs from Cuba.

U. S. Imports and Exports of Edible Fishery Products,
January 1962 with Comparisons

January 1962 with Comparison						
Item	Quantity			Value		
	Jan.		Year	Jan.		Year
	1962	1961	1961	1962	1961	1961
	(Millions of Lbs.)			(Millions of \$)		
Imports:						
Fish & Shellfish:						
Fresh, frozen, & processed 1/	89.0	85.1	1,026.3	32.2	26.4	333.6
Exports:						
Fish & Shellfish:						
processed only 1/						
(excluding fresh & frozen) 1/	3.5	2.5	28.6	1.4	1.1	13.2
1/Includes pastes, sauces, clam chowder and juice, and other specialties.						

1/Includes pastes, sauces, clam chowder and juice, and other specialties.

United States exports of processed fish and shellfish in January 1962 were up 40.0 percent in quantity and 27.3 percent in value as compared with January 1961. The January 1962 exports were greater than in the same month of 1961 because of higher exports of canned mackerel, canned salmon, canned sardines not in oil, frozen shrimp, and canned squid.

Compared with the previous month, the exports in January 1962 were down 23.9 percent in quantity, but were up 7.7 percent in value.

Processed fish and shellfish exports for 1961 were down 41.3 percent in quantity and 31.2 percent in value as

compared with 1960. The following leading products were exported in substantially lesser quantities in 1961 as compared to 1960: fresh and frozen salmon (1,095,000 pounds in 1961 and 2,849,000 pounds in 1960), canned salmon (7,186,000 pounds in 1961 and 11,924,000 pounds in 1960), canned sardines not in oil (7,475,000 pounds in 1961 and 20,955,000 pounds in 1960), canned shrimp (2,502,000 pounds in 1961 and 3,482,000 pounds in 1960), and canned squid (3,433,000 pounds in 1961 and 7,530,000 pounds in 1960). There were increases in the exports of canned mackerel (from 1,305,000 pounds in 1960 to 3,908,000 pounds in 1961) and frozen shrimp (from 2,989,000 pounds in 1960 to 4,771,000 pounds in 1961 ^{1/}).

^{1/}Does not include re-exports which were substantial in 1961.

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IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which could be imported into the United States during the calendar year 1962 at the 12½-percent rate of duty had not been announced as of early March.

Imports from January 1-March 3, 1962, amounted to 8,050,911 pounds (about 383,400 std. cases), according to data compiled by the Bureau of Customs. During the same period in 1961 a total of 7,475,964 pounds (356,000 std. cases) had been imported.

Note: See p. 77 of this issue.

* * * * *

IMPORTS AND EXPORTS OF FISHERY PRODUCTS, 1961:

The trend toward obtaining a larger part of United States requirements for fishery products from imports continued in 1961. U. S. imports of several major fishery products reached record levels. Among these were groundfish and ocean perch fillets, scallops, spiny lobsters, shrimp, canned tuna in brine, canned oysters, and fish meal.

In 1961, over 44 percent of the United States supply of fishery products was obtained from foreign countries. Imports supplied the major share of many fishery commodities consumed in the United States. For the first time, imports of shrimp (round-weight basis) were greater than domestic production.

Compared with 1960 receipts, substantial increases were reported in imports of tuna loins and discs, canned sardines, and swordfish. Principal items showing decreases from 1960 were fresh, frozen, and canned salmon, fresh or frozen tuna, and fresh-water fillets.

United States exports of the leading edible fishery products of domestic origin were down one-third from 1960. Fish oil exports declined by 15 percent. Among the other products exported in substantially lesser quantities during 1961 were canned sardines, salmon, shrimp, and squid. Canned mackerel and frozen shrimp were exported in greater quantities.

Review of Imports (1961 compared with 1960): In 1961, imports of groundfish and ocean perch fillets and blocks increased 26 percent. This included an increase of 32 percent in the quantity of blocks or slabs. Canadian shipments of blocks and slabs increased by 24 percent, Icelandic by 49 percent, and Danish by 40 percent. Imports of fillets

Table 1 - U. S. Imports of Selected Fishery Products, 1960 and 1961

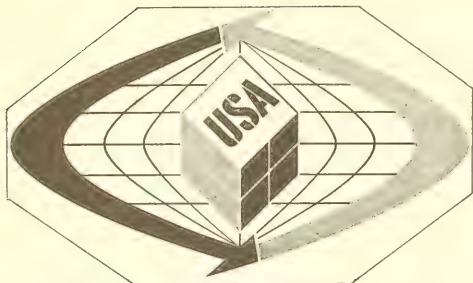
Commodity	1961	1960
... (1,000 Lbs.) ...		
Groundfish and ocean perch:		
Fillets	76,589	65,878
Blocks and slabs	118,675	89,672
Total	195,264	155,550
Fillets other than groundfish:		
Flounder	18,420	18,724
Fresh-water fish	9,839	11,805
Other	21,447	18,125
Swordfish (incl. steaks, fillets, & chunks)	22,228	20,315
Tuna, fresh or frozen:		
Albacore	71,946	69,801
Other than albacore	128,804	164,847
Total	200,750	234,648
Tuna loins and discs	8,348	6,711
Tuna, canned in brine:		
Albacore	29,116	15,775
Other than albacore	29,117	35,384
Total	58,233	51,159
Tuna, canned in oil	430	596
Bonito and yellowtail, canned	10,354	9,904
Crab meat, canned	4,238	4,507
Lobster, fresh or frozen:		
Northern	21,299	21,403
Spiny	32,590	32,946
Lobster and spiny lobster, canned	2,828	2,939
Oysters, mostly canned	7,702	7,025
Salmon:		
Fresh or frozen	12,310	13,472
Canned	7,381	19,113
Sardines:		
Canned in oil	27,877	21,236
Canned not in oil	14,611	6,141
Sea scallops	8,653	6,873
Shrimp, mostly frozen, some canned and dried	126,282	113,418
Fish meal	435,690	263,122
Fish solubles	13,478	6,948

other than groundfish increased slightly; fresh-water fillets declined by 17 percent.

Imports of frozen albacore tuna showed a small rise, whereas frozen tuna other than albacore decreased 22 percent. In total, this amounted to a 14-percent decrease in imports of fresh and frozen tuna. Imports of tuna loins and discs rose by 24 percent, but the quantity was much less than the other types of tuna imported.

Imports of canned tuna in brine increased by 18 percent. Japan accounted for 73 percent of the total quantity. Canned bonito and yellowtail imports increased 5 percent; Peru was the principal supplier of those products.

A new high was reached in imports of frozen spiny lobster. Principal gains were from Brazil, Mexico, South Africa, and the Bahamas. Imports of northern lobster were slightly less than during 1960.



Canned salmon imports decreased 61 percent. Imports from Japan, the principal supplier, declined from 18 million pounds in 1960 to 5.5 million pounds in 1961. Fresh or frozen salmon from Canada, the main supplier, dropped slightly.

Norway and Portugal supplied the major share of the imported canned sardines in oil. Most of the canned sardines not in oil were imported from the Union of South Africa. Both showed important increases.

Imports of sea scallops--nearly all from Canada--increased 26 percent from 1960 to 1961.

Shrimp, mostly frozen, increased 11 percent. For the first time in the history of the shrimp fishery, the quantity of imports exceeded that of the domestic catch. Mexico accounted for 63 percent of total imports.

In 1961 fish meal imports reached an all-time high of 435.7 million pounds (217,845 short tons) for a 66-percent increase over the preceding year. Over half of the imports were from Peru. Imports of fish solubles were also 12 percent greater.

Review of Exports (1961 compared with 1960): During 1961, exports of sardines not in oil amounted to 7.5 million pounds, compared with 20.9 million pounds in 1960, or a decrease of 64 percent. Shipments to the Philippines, Ecuador, and New Zealand declined.

Table 2 - U. S. Exports of Selected Fishery Products, 1960 and 1961

Commodity	1961	1960
	... (1,000 Lbs.) ...	
Fish oils	122,486	143,659
Misc. fish, mostly fresh-water, fresh or frozen	3,608	4,928
Oysters, shucked	580	604
Salmon:		
Fresh or frozen	1,095	2,849
Canned	7,186	11,924
Mackerel, canned	3,900	1,305
Misc. canned fish, mostly Calif. anchovies	453	483
Sardines:		
Canned not in oil	7,475	20,955
Canned in oil	185	264
Shrimp 1/:		
Fresh or frozen	4,771	2,989
Canned	2,502	3,482
Squid, canned	3,433	7,530

1/Does not include a substantial amount of re-exports of Mexican shrimp, principally to Japan.

Fish oil exports dropped 15 percent owing to reduction in shipments to Sweden, the Netherlands, and West Germany. A large gain was noted in exports to Canada and Norway. United States exporters of fish oil met strong competition from Peruvian fish oil in markets of Western Europe.

A decline in shipments of canned salmon to the United Kingdom accounted for most of the 40-percent drop in canned salmon exports.

Squid exports were about half those of 1960. Exports to the Philippines dropped from 4.4 million pounds in 1960 to 309,000 pounds in 1961.

Exports of canned mackerel tripled in 1961 to 3.9 million pounds. El Salvador received 802,000 pounds; the remainder went to various countries in smaller amounts.

Exports of domestic fresh or frozen shrimp increased 60 percent; Japan and Canada each received about 2 million pounds. Canned shrimp exports declined 28 percent. (Does not include a substantial amount of re-exports, principally to Japan.)



Virginia

MARINE SCIENTISTS CONTINUE STUDIES OF RADIOACTIVE WASTES:

The Atomic Energy Commission renewed its grant to the Virginia Institute of Marine Science by awarding an additional \$20,000 for a continued study of the role of filter-feeding marine organisms in removing radioactive wastes from river and bay waters, according to the Director of the Institute. The studies were begun in 1961 with an initial \$20,000 grant.

"Our scientists are among the first to consider the role of living organisms in removing radioactive particles suspended in the water," the Institute's Director reported. "Since the Hampton Roads-York River area is now a center for atomic-powered Navy and commercial vessels, and since the use of this source of energy will grow rapidly in the next decade, it is most appropriate that these studies be carried out by Virginia's marine laboratory."

One of the Institute's researchers in recent years has conducted experiments which indicate that oysters deposit enormous quantities of organic and inorganic material on the bottom. Through field and laboratory experiments he is learning the stability of these deposits, of what they consist, and the size of the particles. The other researcher on the project is determining the amount of radioactive material which may be tied up in these deposits.

Commercial growers frequently plant 300,000 oysters of the size being used in experimental work by the Institute's researchers on each acre of their oyster beds. Calculations arrived at by the researchers indicate that these oysters may deposit over a ton of material per acre each week during growing seasons.

During the first months of work, the two researchers set up equipment and conducted many preliminary experiments to test the reliability of the equipment.

"'Red tide' organisms which have appeared in great quantities in the York River during July and early August 1961 so disrupted the feeding of oysters that it took them from 7 to 10 days to resume normal feeding activities," one of the researchers reports. "During the time of 'red tides' the deposition rate by oysters and other plankton feeders might be greatly reduced," he concluded.

During the coming year, one-celled plants will be cultivated in sea water fertilized with radioactive chemicals in the laboratory. The scientists will feed these plants to experimental oysters and later measure the amount of radioactive material incorporated into their bodies.

Another laboratory project involves feeding oysters mixtures of radioactive plants and suspended silt and clay on which radionuclides are attached in amounts commonly encountered in the marine environment. The permanence of radionuclides in the deposits will then be determined.

Other experiments are being set up to measure the effect of turbidity and temperature on the rate at which the deposits are made. A controlled temperature system will be installed to raise the temperature from 0° C. to 30° C. (32° F. to 86° F.), temperatures to which oysters are subjected in the river, during which time varying amounts of food and suspended clays and silts can be introduced.

The results of these studies financed by the Atomic Energy Commission will help scientists predict the outcome of dumping nuclear wastes or the accidental release of radioactive material into tidal waters of the state by a nuclear reactor. If they remain suspended in the water rather than tied up in bottom deposits, tidal action may rapidly di-

lute and disperse them. If, on the other hand, they are concentrated by filter-feeding organisms and tied up in bottom deposits, they may remain in the immediate vicinity for long periods of time.



Wholesale Prices, March 1962

Although fishery landings in New England and other parts of the country were seasonally heavier this March, they were lighter than a year earlier. The March wholesale price index for edible fishery products at 120.3 percent (using the new base of 1957-59=100) was 0.5 percent higher than in the previous month and 13.2 percent higher than in March 1961.

A spurt of fresh shrimp at New York City shipped from the South Atlantic States in mid-March caused a 4.8-percent drop in prices for that product. This decline was responsible for the drop of 1.8 percent from February to March in the index for processed fresh fish and shellfish. Not quite offsetting the drop in shrimp prices was an increase of 11.1 percent in fresh haddock fillet prices at Boston because of insufficient landings to meet the demand. Compared with March 1961, the subgroup index was up 14.7 percent with prices this March for all items substantially higher. Prices were up for fresh haddock fillets by 14.7 percent, for fresh shrimp at New York City by 17.7 percent, and for shucked oysters by 10.8 percent.

Wholesale prices of the items under the drawn, dressed, or whole finfish subgroup were mixed and the subgroup in-



Raw breaded shrimp on conveyor belt moving to weighing and packaging line.

dex from February to March rose 2.7 percent. Prices of large haddock at ex-vessel at Boston this March were up 15.5 percent as compared with the previous month. This increase was offset somewhat by lower prices for whitefish (down 3.3 percent) at Chicago and frozen western halibut (down 0.4 percent) at New York City. More Canadian whitefish accounted for the lower prices on that product. Compared to a year earlier, March 1962 prices for the subgroup were 7.8 percent higher with nearly all items significantly higher priced. Although this March haddock landings at Boston were seasonally higher, they were substantially below a year earlier. This accounted for the 31.5 percent higher ex-vessel prices for fresh haddock this March. Signifi-

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, March 1962 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes 2/ (1957-59=100)			
			Mar. 1962	Feb. 1962	Mar. 1962	Feb. 1962	Jan. 1962	Mar. 1961 3/
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					120.3	119.7	115.2	106.3
Fresh & Frozen Fishery Products:					119.4	118.5	112.4	104.6
Drawn, Dressed, or Whole Finfish:					121.8	118.6	109.7	113.0
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.16	.14	124.0	107.4	78.1	94.3
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.40	.40	116.8	117.3	110.4	96.6
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.86	.86	120.5	120.5	120.5	122.2
Whitefish, L, Superior, drawn, fresh	Chicago	lb.	.75	.78	111.9	115.7	110.5	104.5
Yellow pike, L, Michigan & Huron, rnd., fresh	New York	lb.	.74	.74	120.4	120.4	92.5	114.7
Processed, Fresh (Fish & Shellfish):					123.2	125.4	117.9	107.4
Fillets, haddock, sml., skins on, 20-lb. tins.	Boston	lb.	.50	.45	121.4	109.3	87.4	100.8
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	1.00	1.05	117.2	123.1	110.2	99.6
Oysters, shucked, standards	Norfolk	gal.	7.75	7.75	130.7	130.7	132.8	118.0
Processed, Frozen (Fish & Shellfish):					109.0	107.7	105.5	90.2
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.40	.40	100.1	100.1	100.1	97.6
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.35	.33	101.1	96.7	96.7	98.2
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.34	.34	119.2	119.2	115.7	106.9
Shrimp, lge. (26-30 count), brown, 5-lb. pk.	Chicago	lb.	.95	.95	112.1	112.1	108.5	82.4
Canned Fishery Products:					123.1	122.1	120.4	109.6
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	28.50	28.50	124.2	124.2	122.0	122.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1 1/2 oz.), 48 cans/cs.	Los Angeles	cs.	12.15	12.15	107.9	107.9	107.9	97.7
Sardines, Calif., tom, pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	5.25	5.25	118.5	118.5	116.2	88.0
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	12.81	12.81	164.3	164.3	157.9	112.2
1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.								
2/ Beginning with January 1962 indexes, the reference base of 1947-49=100 was superseded by the new reference base of 1957-59=100.								
3/ Recomputed to be comparable to 1957-59=100 base indexes.								

cantly smaller frozen stocks in cold storage were responsible for the higher prices (up 20.9 percent) at New York City for western halibut. Fresh whitefish at Chicago was priced 7.1 percent higher this March than a year earlier. But with slightly more frozen salmon on hand this year, March prices at New York City for that product were down 1.4 percent as compared to a year earlier.

Prices for processed frozen fish and shellfish in March 1962 were 1.2 percent higher than the previous month principally because of higher prices for frozen haddock fillets (up 4.6 percent). Compared to the same month last year, March 1962 prices were up a substantial 20.8 percent. The continued scarcity was responsible for the 36.1-percent increase in the Chicago price for frozen shrimp. Lighter supplies caused the frozen fillet prices at Boston to go up for ocean perch by 11.5 percent, for haddock by 3.0 percent, and for flounder by 2.6 percent.

The index for the canned fishery products subgroup remained steady at the February 1962 level. The 1961/62 season for California sardines ended on February 28 with the pack even smaller than that in 1960. Maine sardine stocks continued to dwindle and demand exceeded the available supplies. Canned pink salmon stocks also were at a low level. Canned tuna stocks were moderate and demand was good, but there was no significant change in prices except that some trade discounts were reported in advertised brands. However, the canned tuna pack in California for the first quarter this year was 11 percent less than in the first quarter of 1961. March 1962 prices for canned fishery products were up a substantial 11.4 percent from a year earlier. All products in the subgroup were priced substantially higher this March: canned Maine sardine prices were up 45.4 percent, canned California sardine prices were up 34.7 percent, canned tuna prices were 10.4 percent higher, and canned pink salmon prices were up 1.8 percent.





International

ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

FISHERIES COMMITTEE MEETING:

The Fisheries Committee of the Organization for Economic Cooperation and Development (OECD) held its third session in Paris, France, on March 19-21, 1962. The agenda for the meeting included: (1) Study of subsidies and other financial support to fisheries of member countries, (2) Report on the European market for canned fish, (3) Study of sanitary regulations affecting international trade in fish and fish products, (4) Market situation for Icelandic fish products, (5) Technical assistance programs in less-developed member countries, and (6) Work program for Fisheries Committee in 1962 and 1963.

A. W. Anderson, formerly Assistant Director of the U. S. Bureau of Commercial Fisheries and now Regional Fisheries Attache in Copenhagen, Denmark, is the U. S. representative on the Fisheries Committee.

On September 30, 1961, the OECD supplanted the Organization for European Economic Cooperation (OEEC). The United States

and Canada, which were associate members of the OEEC, are full members of the 20-nation OECD. In addition to the United States and Canada, the other members are the six Common Market countries, the United Kingdom, Norway, Iceland, Sweden, Denmark, Portugal, Switzerland, Austria, Greece, Spain, Turkey, and Ireland.

Under the OECD, a Fisheries Committee was established to carry out a program to promote the harmonious development of fisheries and to iron out trade problems. This Committee will have close links with the OECD Trade Committee and others concerned with economic policies. Since September 1961, the Committee has met twice to begin work on such major trade problems as subsidies and supports, import restrictions, sanitary requirements, and marketing practices.

ORGANIZATION FOR ECONOMIC COOPERATION & DEVELOPMENT

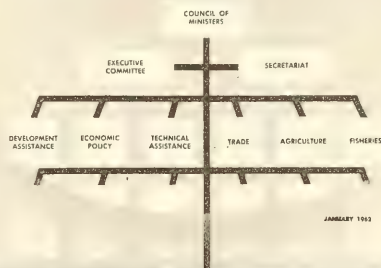


Fig. 2 - A Fisheries Committee in OECD will work closely with other committees concerned with economic policies of member countries.

ORGANIZATION FOR ECONOMIC COOPERATION & DEVELOPMENT

A 20 NATION EFFORT TO ACHIEVE ECONOMIC GROWTH

UNITED STATES	FRANCE	ITALY	SPAIN
CANADA	WEST GERMANY	LUXEMBOURG	SWEDEN
AUSTRIA	GREECE	NETHERLANDS	SWITZERLAND
BELGIUM	IRELAND	NORWAY	TURKEY
DENMARK		PORTUGAL	UNITED KINGDOM

JANUARY 1963

Fig. 1 - Through cooperative actions, OECD will spur economic growth, encourage trade, and aid lesser-developed countries.

The program of the Committee involves confrontations and consultations between member countries on fisheries policies, examining problems of mutual interest, studying market situations for major fishery products, improving trade, and assisting develop-

International (Contd.):

oping countries in problems of production, export, and distribution.

ORGANIZATION FOR
ECONOMIC COOPERATION
& DEVELOPMENT
FISHERIES COMMITTEE

OECD



PROGRAM OF WORK . . . 1962

- SEEK REMOVAL OF SUBSIDIES AND IMPORT RESTRICTIONS
- PROMOTE QUALITY STANDARDS
- DEVELOP IMPROVED PACKAGING
- SIMPLIFY SANITARY REGULATIONS
- PROMOTE FISH CONSUMPTION

JANUARY 1962

Fig. 3 - The OECD Fisheries Committee will promote harmonious development of fisheries and iron out trade problems.

The over-all aim of the OECD is to achieve sound economic expansion. The new organization will stress the need for major free world nations to consult closely in their economic policies. It will also seek cooperation to promote economic, social, and technical development in the less advanced regions of the world.

In 1960, OEEC issued a comprehensive report on "Fishery Policies in Western Europe and North America" describing the fisheries in each country, the tariff and support policies, and recommending removal of many of the barriers hampering trade in fishery products.

TERRITORIAL FISHING RIGHTS

NORWAY AND U. S. S. R.

CONCLUDE NEGOTIATIONS:

Officials of the Soviet Union and Norway, on February 22, 1962, signed an agreement on fishing rights in territorial waters based on the principle of reciprocity. Negotiations on the new pact were conducted at Moscow. The agreement is subject to approval by the two governments.

The pact will give Soviet fishermen the right to operate between 6 and 12 nautical miles off the Norwegian coast, until October 31, 1970. Similar privileges were extended to British fishermen under the British-Norwegian pact of November 17, 1960.

In return, Norwegian fishermen will enjoy special rights to operate in certain wa-

ters within the Soviet 12-mile limit, including the Nordfargrunden fishing bank in the Varanger Bay area, and the Henøy banks off Cape Niemetski. Both were important fishing grounds for Norwegians until the Soviet Union extended the limit of its territorial waters shortly after World War II to 12 miles.

Two nations, Great Britain and the Soviet Union, have so far signed pacts with Norway to secure rights within its extended fishery zone. Negotiations with France are expected to start soon. (News of Norway, March 15, 1962.)

Note: See Commercial Fisheries Review, January 1962 p. 60.

INTERNATIONAL NORTH PACIFIC FUR SEAL COMMISSION

REPORT ON FIFTH ANNUAL MEETING:

The International North Pacific Fur Seal Commission approved continuation of its wide-ranging program of research by scientists of the four contracting countries and to a harvest of fur seals in 1962 that will be comparable to last year's take. The latter decision reflects the success that has attended the work of the Commission in developing and maintaining the stocks of fur seals of the North Pacific to levels designed to produce the highest sustainable yield. This action was taken at the Fifth Annual Meeting of the Commission in Ottawa, Canada, February 7-9, 1962.

Established under the provision of the 1957 Interim Convention on Conservation of the North Pacific Fur Seals, the Commission is composed of representatives from the member countries of Canada, Japan, the U. S. S. R., and the United States. The Commissioners are George R. Clark, Deputy Minister of Fisheries of Canada; Masayoshi Ito, Director of the Fisheries Agency, Ministry of Agriculture and Forestry of Japan; Aleksander A. Ishkov, Minister of the U. S. S. R. and Chief of the Main Administration of Fish Economy of Gosplan; and Ralph C. Baker, Chief of the Division of Resource Development, U. S. Bureau of Commercial Fisheries. The Commission meeting, which began on February 7, was preceded by a meeting of the Standing Scientific Committee of the Commission from January 29 to February 6.

The North Pacific Fur Seal Commission has as its major responsibility the investigation of the fur seal resources of the North Pacific Ocean. The objective of this investigation is to determine the measures which will make possible the maximum sustainable yield from those resources, with due regard

International (Contd.):

for their relation to the productivity of other living marine resources in the area.

Under the terms of the Convention pelagic sealing (killing of seals at sea) is forbidden except for certain specific numbers that may be taken pelagically by scientists of the member countries for research purposes and the operations of aborigines using primitive weapons. All harvesting is done on the breeding grounds under the control of the Soviet Government on Robben Island in the sea of Okhotsk and the Commander Islands in the Western Bering Sea, and under the control of the United States on the Pribilof Islands in the Eastern Bering Sea. During 1961 the commercial land take by the U.S.S.R. was 10,882 seals and by the U.S., 95,974 animals. The Convention contains a provision whereby Canada and Japan each receive 15 percent of the seal skins taken by the United States commercial operations on the breeding grounds and, subject to certain stipulations, a similar percentage of the U.S.S.R.'s commercial take on the breeding grounds.

In accordance with plans developed by the Commission, research agencies of the four participating countries carry out research at sea. Research and management on the breeding grounds are conducted by the United States on the Pribilofs and by the Soviet Union on the Commander Islands and on Robben Island. The scientific investigations are concerned with dynamics of the fur seal populations, distribution and migration at sea, feeding habits, and harvesting methods.

During 1961 scientists of the four member countries conducted extensive researches at sea and the results of the operations, together with those of the U.S.S.R. and the United States on the breeding grounds under their respective controls, were reviewed by the Commission. Reports on the pelagic investigations provided valuable information on the migratory patterns and range of feeding habits of the seals. An extensive tagging program was conducted on the breeding grounds as part of the scientific studies; Soviet scientists tagged 10,472 seal pups on Robben Island and 11,069 on the Commander Islands, and United States scientists tagged 50,000 pups and 740 yearlings and two-year-old seals on the Pribilof Islands. Recovery of tags from recaptured young seals indicates a certain intermingling of the herds

with some United States tagged seals appearing on Robben and the Commander Islands and some Soviet-tagged seals appearing on the Pribilofs.

For some years past there has been evidence of overcrowding conditions on the main Pribilof Islands breeding grounds and as a corrective measure, with the Commission's approval, the United States has included in its commercial take specified numbers of surplus female seals. It was noted that in spite of this female kill, together with the loss occurring through natural causes, the number of females is estimated to be larger than the level calculated to be necessary for optimum production.

Research at sea in 1962 will again begin in February and will generally be along the lines mentioned above. On land the scientists will, among other matters, give attention to the numbers of seals returning to the breeding grounds, natural mortality rates, reproduction, and behaviour of the various segments of the herds.

The Commission noted the high degree of co-operation that has emerged, and is being continued, among the scientists of the four countries.

The United States Commissioner Ralph C. Baker was elected Chairman of the Commission, to serve through the next Annual Meeting and George R. Clark, the Canadian Commissioner, was elected Vice-Chairman.

The next Annual Meeting of the Commission will be held in Washington, D. C., November 26, 1962. The Standing Scientific Committee will meet for three days prior to that date to consider the results of the year's investigations and its report to the Commission.

Note: See Commercial Fisheries Review, March 1962 p. 32.

FOOD AND AGRICULTURE ORGANIZATION

SITE SELECTED FOR WORLD
TUNA CONGRESS IN 1962:

The Art Center in La Jolla, Calif., has been selected as the site for the World Scientific Meeting on the Biology of Tuna and Related Species, scheduled for July 2-14, 1962. The meeting is sponsored by the Food and Agriculture Organization of the United Nations. It is being held in the United States at the invitation of the United States Govern-

International (Contd.):

ment and with the cooperation of the State of California and Scripps Institution of Oceanography.

Southern California, center of the important United States tuna fishing industry, is a natural location for the meeting. Annual landings of tuna in that area are valued at more than \$40 million at dockside.



The world tuna catch in 1960, produced by fishermen of 50 nations, amounted to about 1½ billion pounds. By 1970 it is predicted that the world demand for tuna will be double this amount. Already the fleets of the major tuna fishing nations are ranging the world's oceans in search of these valuable fishes. If the maximum catch is to be achieved and sustained in the face of increasing fishing pressure, scientific estimates of this maximum sustainable harvest must be made as quickly as possible. The World Tuna Congress will review the status of knowledge and recommend programs of research, development, and management.

The meeting has attracted wide attention among fishery scientists and tuna industry people. Wide attendance from the United States and foreign countries is expected.

Note: See Commercial Fisheries Review, December 1961 p. 61.

INTERNATIONAL NORTHWEST
PACIFIC FISHERIES COMMISSIONSIXTH ANNUAL MEETING:

A 19-man delegation represented Japan at the Sixth Annual Meeting of the Northwest Pacific Fisheries Commission (Japan-U. S. S. R.) which convened in Moscow on February 26, 1962. Nine members of the Japanese fisheries delegation departed Tokyo February 22. The delegation was headed by Iwao Fujita, Vice President of Japan Fisheries Association, and also chairman of this sixth annual meeting of the Commission. He was accompanied by Commissioner Sunichi Oguchi, Chief, Production Division, Fisheries Agency, and fisheries experts and advisers. Industry advisers left Japan early in March.

Note: See Commercial Fisheries Review, March 1962 p. 32.

WHALING

NORWEGIANS REPORT SALES OF
1961/62 SEASON'S WHALE OIL:

According to newspaper reports, 45,000 long tons of whale oil have been sold to the largest British buyer and user at £50 (US\$140) per long ton, which is the lowest price since 1945. The sellers are: Norway 17,000 tons, Japan 20,000 tons, and the United Kingdom 7,000 tons. The Netherlands is said to have been offered the same price for 5,000 tons. (United States Embassy, Copenhagen, report of March 12, 1962.)

ATOMIC-POWERED MARINE RESEARCH VESSEL

No recommendation on the construction of an atomic-powered marine research vessel by the Organization for Economic and Cooperative Development resulted from the January 25 meeting in Le Havre, France, of a study group of experts who visited a French shipyard specializing in marine research vessels, according to a report in Berlingske Tidende, January 30, 1962. This was corroborated by the Danish member (an engineer in the nuclear reactor division of a Copenhagen firm) of the study group.

The European Nuclear Energy Agency (ENEA), OECD's cooperative atomic organization, established the study group in October 1961. According to a Danish member, the group is studying three atomic-powered projects: the marine research vessel in France, a bulk carrier in Sweden, and a tanker in the Netherlands. The group planned to visit Malmö about February 16 to discuss the atomic-powered bulk carrier. Later it was to visit the Netherlands in connection with the proposal to construct an atomic-powered tanker. (January 30, 1962, report from the Regional Fisheries Attache, United States Embassy, Copenhagen.)

Note: See Commercial Fisheries Review, March 1962 p. 35.



Angola

FISHING INDUSTRY TRENDS, 1961:

The Angolan fishing industry throughout 1961 was plagued with low fish meal prices, small catches, poor organization, obsolete equipment, and a shortage of credit. Only 105,183 metric tons of fish valued at US\$2,131,014 were caught by Angola's fishing fleets during the first six months of 1961.

Angola (Contd.):

(latest figures available) compared to 152,545 tons valued at \$2,621,503 caught during the same period in 1960.

Although the quantity of exports of Angolan fishery products was considerably higher during the first three quarters of 1961 than during the same period in 1960 (table 1), their average value per ton declined from \$131.80 to \$121.31.

Table 1 - Angola's Principal Fishery Exports, January-September 1961 and 1960

Commodity	January-September			
	1961		1960	
	Quantity	Value	Quantity	Value
	Metric Ton	US\$ 1,000	Metric Ton	US\$ 1,000
Fish meal	32,918	2,779	21,039	1,963
Fish oil	1,978	210	4,239	524
Dried fish	15,367	2,670	8,646	1,654
Canned fish	1,201	590	799	435

A Government subsidy to fish meal exporters of \$5 per ton for machine-dried meal and \$10 per ton for sun-dried meal was withdrawn at the beginning of 1961, but other supports were continued throughout the year, such as a 44-per-cent reduction in the price of Diesel fuel for the fishing fleet and exemptions from export duties for fishery products. Some credit was also made available to the fishing industry by the Fishing Industry Aid Fund and the Bank of Angola to cover expenditures in connection with readying the fleets for the 1961 fishing season. That the situation and morale of the Angolan fishing industry remains very poor was, however, illustrated by a recent article in the Benguela newspaper which claimed that 90 percent of the industry is convinced of the "hopelessness of its struggle" (United States Consulate, Luanda, February 16, 1962.)



Australia

TUNA FISHERY TRENDS AS OF JANUARY 1962:

The 1961/62 tuna season on the New South Wales south coast was over on January 7, 1962. The following week the only tuna landed was 827 pounds at Eden. The total for the season was estimated at 1,737 short tons. This was 30 percent less than the 1960/61 catch. Continuous bad weather and recurring storms throughout the 1961/62 tuna season hampered fishing.

The South Australian season opened on January 16, 1962, when three vessels took 75 tons of tuna. About 12-14 vessels were expected to fish tuna during the season of which 5 would be from New South Wales. (Australian Fisheries Newsletter, February 1962.)



Brazil

JAPANESE FISHING VESSELS IN BRAZIL TO CHANGE TO BRAZILIAN REGISTRY:

The three large Japanese fishing companies which operate fishing bases in Brazil for whaling, trawling, and tuna fishing, reportedly faced the possible prospect of having to terminate their operations in that country following the shake-up in the Brazilian Government in the fall of 1961. The Brazilian Government has instituted strict foreign exchange regulations and has demanded that the Japanese firms abide by the law which states that one-third of the crew on foreign vessels operating out of Brazil must be Brazilian nationals, and which calls for the replacement of foreign vessel officers with Brazilian nationals. This problem is said to have been overcome under the arrangement whereby most of the Japanese fishing vessels presently operating out of Brazil will be changed to Brazilian registry.

Under this arrangement, the two Japanese firms, which jointly operate 2 whaling vessels (No. 1 and No. 2 Daishin Maru) and 4 tuna vessels out of Brazil, will switch to Brazilian registry the No. 1 Daishin Maru and 2 tuna vessels (one of 300 and the other of 320 tons gross). In addition, they will also register, under the Brazilian flag, another 99-ton tuna vessel not now a part of their Brazilian fleet. The No. 2 Daishin Maru and the 2 remaining tuna vessels will be assigned elsewhere, although the tuna vessels will continue to operate in the Atlantic Ocean.

The third Japanese firm operates 3 whaling vessels (No. 12 Fumi Maru, No. 12 Seki Maru, and No. 15 Higashi Maru), 9 trawlers, and 1 tuna vessel, out of Brazil. The firm plans to recall the whaler No. 15 Higashi Maru and the one tuna vessel, and to register under the Brazilian flag the 9 trawlers. Originally, the Japanese firm had also planned on transferring to Brazilian registry the 2 whaling vessels (No. 12 Fumi Maru and No. 12 Seki Maru). However, these two vessels are presently operating on the Antarctic whaling grounds and, in their place, the Japanese firm wants to transfer two other whalers from its Kosmos whaling fleet, which it had originally purchased from Norway.

All three Japanese fishing firms are presently reported to be negotiating methods of handling payments involved in the transfer of vessel registries. (Suisan Tsushin, February 17 and 26, 1962.)



Burma

CANNED FISH BIDS CANCELED:

On March 13, 1962, the Burmese Government purchasing agency offered to buy canned sardine or canned saury on international bidding. However, on March 15, the Japanese canned foods exporters received information that the bids were cancelled due to the Burmese Government's sudden issuance of instructions banning canned fish imports. But it is felt that the Burmese Government will eventually negotiate with Japan for delivery of canned sardine and canned saury in the form of reparations payments.

A South African firm reportedly underbid all other foreign firms with an offer to sell 54,000 cases of 1-lb. tall 48's for 43 shillings 8 pence (US\$6.11 per case). The Japanese Type of pack not indicated but believed to be natural.

Burma (Contd.):

nese exporters are reported to have made bids of 57 shillings 6 pence (US\$8.05) for 1-lb. tall canned saury, 34 shillings 4 pence (US\$4.77) for 8-oz. tall (buffet style) saury, and 58 shillings 4 pence (US\$8.17) for 1-lb. oval sardines^{2/}. (Suisan Shimbun, March 16, 1962.)

^{2/}Japanese prices are believed to be for canned fish packed in tomato sauce.



Canada

BRITISH COLUMBIA HERRING LANDINGS AND PRODUCTS, 1956/57-1961/62:

Herring landings in British Columbia during the 1961/62 season were 30.4 percent greater in quantity than in the previous season. This season's fish meal production was up 27.5 percent and fish oil production was up 58.2 percent as compared with the previous season.

manufacture of margarine and shortening. Canadian imports of fish oil during January-September 1961 increased substantially--the United States supplied over 13 million pounds and Iceland 4 million pounds. (United States Embassy, Ottawa, report of March 1, 1962.)

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NEW BRUNSWICK FISH MEAL PRICES, FEBRUARY 1962:

Fish-meal prices (60-percent protein) quoted by New Brunswick producers the latter part of February 1962 averaged about C\$126 a short ton (\$2.10 a protein unit) for both exports and domestic sales. The price in February was 5 percent higher than in January when fish meal sold at C\$120 a short ton (\$2.00 a protein unit). (United States Consul, Saint John, N.B., February 27, 1962.)

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DOGFISH LIVER SUBSIDY PROGRAM:

The Canadian Department of Fisheries on March 7, 1962, announced that the dogfish liver subsidy program on the West Coast had

British Columbia Herring Landings and Products, 1961/62 Season with Comparisons

Season Ending	Unit	Mar. 10, 1962	Mar. 18, 1961 ^{1/}	Mar. 12, 1960 ^{1/}	Mar. 14, 1959	Mar. 15, 1958 ^{1/}	Mar. 16, 1957
Landings:							
District No. 2:							
Northern	Tons	33,254	47,088	23,239	10,980	11,286	31,004
Central	"	39,032	43,505	10,919	40,628	14,965	36,213
O. C. Islands . .	"	16,604	2,896	3,121	23,058	13,774	29,089
District No. 3:							
Lower East Coast	"	51,821	31,309	55,582	51,648	18,284	43,389
Middle East Coast	"	20,561	10,023	20,014	10,183	9,932	20,001
Upper East Coast	"	13,294	2,978	10,005	15,015	3,470	15,045
West Coast . . .	"	49,595	34,142	62,273	78,122	12,624	5,202
Total Landings	"	224,161	171,941	185,153	229,634	84,335	179,943
Products Produced:							
Bait	Tons	575	1,619	848	1,046	2/	1,116
Meal	"	39,535	31,014	34,492	42,307	14,886	32,555
Oil	Imp. gals.	4,676,991	2,956,948	4,585,307	4,545,845	1,900,775	3,452,762

^{1/}Limited operations.

^{2/}Less than three Companies reporting.

Source: Canadian Department of Fisheries, Vancouver, B. C.

Note: See Commercial Fisheries Review, May 1961 p. 43.

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HERRING OIL TRENDS:

Canada's herring oil price at Toronto in January 1962 averaged 7.67 Canadian cents a pound. This was substantially lower than the 1961 annual average price of 8.97 cents a pound and the 1960 annual average of 8.66 cents a pound. (The annual averages are based on monthly average prices.)

Canada's fish oil consumption in 1961 more than doubled and represented more than 15 percent of the total oils used in the

been extended to allow for the take up of the remaining C\$12,000 left in the subsidy allocation for the fiscal year 1961/1962 (ending March 31). At the rate of 12 cents per pound for the livers this means that 100,000 pounds would be accepted for subsidy prior to March 31, 1962. As of March 21, a total of 55,000 pounds of livers had been delivered under this extension.

A total of C\$150,000 was earmarked by the Government to cover the subsidy program for the fiscal year ending March 31, 1962. The Department had terminated the program

Canada (Contd.):

on November 6, 1961, as it looked like all the funds available for the program had been expended. But later it was determined that C\$12,000 had not been used.

Note: See Commercial Fisheries Review, January 1962 p. 46.



Chile

NORWEGIAN FIRM BUILDS REDUCTION PLANT IN CHILE:

A Bergen, Norway, firm early this year was constructing a fish reduction plant in Chile, according to the January 24 issue of Fiskaren, a Norwegian fishery trade periodical.



The factory will have a capacity of 5,000 hectoliters or 465 metric tons each 24 hours, and it is deemed a certainty that the plant will receive raw material for operations 300 days of each year. It will be equipped with Norwegian reduction machinery.

The Norwegian company's fishing vessel Senior was scheduled to leave for Chile the end of January 1962 with complete equipment to fish for anchovies. The vessel is equipped

with two dories, and each dory has a power block. The catch will be pumped from the purse seine into the vessel.

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JOINT SOUTH AFRICAN-CHILEAN FIRM TO BUILD FISH MEAL PLANT:

The Chairman of a South African group of fishing companies announced in January 1962 that the investment company of the group has made a "most interesting and, we trust, profitable investment" in the Chilean fishing industry. A 50-50 arrangement had been made with a Chilean organization whereby a new company has been formed.

The firm now contemplates that a fish meal reduction plant with a capacity of 50 metric tons per hour will be built at Iquique in northern Chile. It will start operations early next year.

A fleet of nine fishing boats will be built in Chile to supply the plant with raw fish. The South African firm estimates the plant could handle 360,000 tons of fish per year if operated continuously with no off-season. On six months of operation and an 8-hour day, this intake would be reduced to about 60,000 tons.

The South African group will send technical personnel to Chile to supervise the design and construction of the plant (to be built by another South African company) and to train Chilean labor to operate it.

The South African group expects that its 1961 profit figure from its Walvis Bay cannery and fish meal plant will reach and possibly exceed that of 1960. The factory achieved its full quota of 62,500 tons of fish landed. The cannery packed over one million cartons of pilchards. (Report from United States Consulate, Cape Town, South Africa, dated January 31, 1962.)

Note: See Commercial Fisheries Review, January 1962 p. 47.



Denmark

FISH FILLETS AND BLOCKS AND FISHERY BYPRODUCTS EXPORTS, 1961:

Denmark exported 1.8 million pounds (50.1 percent) more fresh and frozen fish fillets during December 1961 than in the same month of 1960. Only 354,000 pounds, mostly cod and related species, were shipped to the United States in December 1961.

Denmark (Contd.):



The fishery for plaice is the most valuable in Denmark. Many plaice are marketed alive in fish shops, but the production of fillets is increasing each year, reaching 24,000 metric tons in 1960.

In the year 1961, Denmark shipped 10.5 million pounds of frozen fish fillets and blocks to the United States, mostly cod and related species.

Almost 21.2 million pounds (42.5 percent) more fresh and frozen fillets and blocks were exported by Denmark in the year 1961 than in 1960.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks and Fishery Byproducts, 1961 and 1960 ^{1/}				
Product	December		Jan.-Dec.	
	1961	1960	1961	1960
	..... (1,000 Lbs.)			
Edible Products:				
Fillets and blocks:				
Cod and related species	1,491	1,286	30,027	24,392
Flounder and sole	1,493	1,615	26,008	23,259
Herring	2,246	-	13,959	-
Other	49	2/616	1,130	2/2,272
Total	5,279	3,517	71,124	49,923
	..... (Short Tons)			
Industrial Products:				
Fish meal, solubles, & similar products	1,940	4,670	49,733	42,377
^{1/} Shipments from the Faroe Islands and Greenland direct to foreign countries not included.				
^{2/} Includes herring fillets.				

There was a drop of 2,730 short tons (58.5 percent) in Denmark's exports of fish meal, fish solubles, and other similar products in December 1961 as compared with the same month of 1960. But exports of those products for the year 1961 were 7,356 tons or 17.4 percent greater than for 1960.

FISH FILLETS AND BLOCKS AND FISHERY BYPRODUCTS EXPORTS, JANUARY 1962:

Denmark exported 155,000 pounds or 3.2 percent more fresh and frozen fish fillets and blocks during January 1962 than in the same month of 1961. Only 210,000 pounds,

mostly cod and related species were shipped to the United States in January 1962.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks and Fishery Byproducts, January 1962 ^{1/}			
Product	January		Jan.-Dec.
	1962	1961	1961
	..... (1,000 Lbs.)		
Edible Products:			
Fillets and blocks:			
Cod and related species	1,847	2,305	30,027
Flounder and sole	1,856	1,742	26,008
Herring	1,285	779	13,959
Other	36	73	1,130
Total	5,054	4,899	71,124
	..... (Short Tons)		
Industrial Products:			
Fish meal, solubles, & similar products	3,362	3,190	49,733
^{1/} Shipments from the Faroe Islands and Greenland direct to foreign countries not included.			
^{2/} Includes herring fillets.			

Denmark's January 1962 exports of fish meal, fish solubles, and other similar products were 172 short tons or 5.4 percent greater than in the same month of 1961. The United Kingdom and West Germany were the principal buyers.

NEW MODERN FREEZER IN SKAGEN:

One of Europe's most modern freezers was opened in Skagen, important fishing port on the northern tip of Denmark, in January 1962. Unlike most freezers and cold-storage warehouses in Denmark, it is all on one floor. Frozen products are stacked to a height of 23 feet with fork lift trucks in storage rooms, whose temperature is -22° F. About 2,200 short tons--18,000 boxes of herring--can be stored. Later modifications will permit shipment by refrigerated ships as well as refrigerated rail cars, according to the January 17 issue of *Børsen*. (Fisheries Attache, United States Embassy, Copenhagen, February 26, 1962.)

FISH SALTING MACHINE PATENTED:

A Danish fisheries exporter in Esbjerg, I. C. C. Dyekjaer, in February 1962 received a patent on a machine which salts fish in one-fourth the time normally required, according to the February 14 issue of *Vestkysten*, an Esbjerg daily newspaper. The first experiments with the machine began in 1957 and 1958 in the inventor's own plant in Esbjerg. Later it was tested in filleting plants at Narsak, Julianehaab, and Godthaab in Greenland. All have expressed satisfaction with the invention.

Denmark (Contd.):

The machine consists of a conveyer belt which transports the fresh fish fillets under a row of devices like hypodermic needles. The points of the needles pierce the fillets, injecting a saturated solution of salt brine, which immediately salts the fish. The fish are fully salted after piling only once. This takes less than eight days, as compared with 21 to 28 days normally. The new machine is expected to save space and increase productivity to a considerable degree.

Several Danish machine shops approached were unable to take over the manufacturing problem, so it was turned over to a Lubeck, West Germany, firm, a well known manufacturer of fish filleting and skinning machines. This company has the production rights and patent rights in foreign countries. The machine is expected to go into mass production soon. It is believed to be especially well suited for installation in trawlers. (Report of February 26, 1962, from the Fisheries Attache, United States Embassy, Copenhagen.)

* * * * *

ESBJERG FISHING VESSELS MUST HAIL CATCH:

Beginning February 1, 1962, Esbjerg fishing craft were required by the Esbjerg Fisheries Association to estimate their food fish landings and report them to the harbor master not later than 3:00 p.m. of the day prior to landing. The quantity of each species must

and the fillet plants which also buy at other ports. It also is expected to improve working practices at the auction hall. After the first week's operation it appeared that the only failures to report were due to unawareness of the regulation or defective radiophones.

In 1961, 2,036 fishermen were registered in Esbjerg, and 534 cutters of over 5 gross tons. Esbjerg receives more landings than any other Danish port, owing to its favorable location on the North Sea on the west coast of Jutland. The 1961 landings totaled 181,000 metric tons of which 158,000 tons was industrial fish for reduction into oil and meal, for fish and fur animal food, and for ensilage. The remaining 23,000 tons was food fish sold through the auction hall. (Fisheries Attache, United States Embassy, Copenhagen, February 26, 1962.)

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FISHERMEN TO SUPPLY DATA ON EARNINGS:

The subcommittee established by the Fisheries Commission to look into the costs and earnings of the Danish fishing industry has decided to send a questionnaire to 10 percent of the Danish fishermen who operate independently, in order to obtain concrete facts on their earnings. The purpose is to provide factual information for the governmental authorities to use when questions of profits or losses in the fish-producing segment of the industry arise.

At present, neither the fishermen, who claim they are losing money because of too low prices, or the governmental authorities, who point to the increased catches and record exports, are able to make a convincing case. Questionnaires will be sent to fishermen in 20 ports this year. Since the fishermen may have to obtain assistance from accountants to complete the questionnaires properly, the subcommittee is seeking, through the Fisheries Ministry, to pay 15 kroner (US\$2.18) to fishermen for each usable questionnaire. The Fisheries Ministry official in charge of the questionnaire program states that between 250 and 300 completed questionnaires were expected from the 20 fishing ports.



A typical Danish fishing vessel. This vessel, built in 1960, is 52.3 gross tons, has a 248 hp. motor and its home port is Skagen.

be reported and it must not differ more than 20 percent from the actual landings, which must occur prior to 9:30 a.m. The regulation was placed in effect to aid buyers for export

Care was being exercised to obtain responses from an appropriate cross-section of the fish-producing industry, including pound net and other gear operators as well as vessel owners, and from those who were making,

Denmark (Contd.):

as well as those who were losing, money. The data will be for the calendar year 1962 and the questionnaires will be sent to additional ports in years to come until all have been covered. (February 26 report of the Fisheries Attache, United States Embassy, Copenhagen.)



German Federal Republic

FISH OIL MARKET AS OF MARCH 1962:

A leading Bremen fish oil importer stated that sales of fish body oil continued to decline late in February and early March 1962. The Peruvians have maintained their fish oil price at \$115 per metric ton (5.2 U. S. cents

IMPORTS AND EXPORTS OF FISH BODY OILS, 1961:

West Germany's imports of fish body oils in 1961 were 12.3 percent less in quantity than in 1960. The drop in value for the same period was 14.3 percent because in 1961 fish oil prices declined. Two of the principal suppliers of fish body oil to West Germany are Peru and the United States. But while the United States in 1960 supplied 27.7 percent of the total imports, in 1961 it dropped to only 8.8 percent. On the other hand, whereas Peru supplied 32.4 percent of the total fish oil imports in 1960, that country's share rose to 61.8 percent in 1961.

West Germany's exports of fish body oils in 1961 were slightly greater (0.4 percent) in quantity than in 1960. But the value of the exports in 1961 was down 10.9 percent because of lower prices. Norway and Sweden are two

Table 1- West Germany's 1/ Imports and Exports of Edible Fish Body Oils, 1961 and 1960

Origin	1961				1960			
	Quantity	Value		Avg. Price	Quantity	Value		Avg. Price
		Metric Tons	Deutsche Marks 1,000	US\$ 1,000		Metric Tons	Deutsche Marks 1,000	US\$ 1,000
Imports:								
Total Imports	55,788	32,987	8,247	6.7	57,871	38,477	9,619	7.5
Principal Suppliers:								
United States	4,913	2,710	678	6.3	16,021	10,874	2,719	7.7
Peru	34,461	19,964	4,991	6.6	18,743	11,870	2,968	7.2
Exports:								
Total Exports	21,006	12,222	3,056	6.6	20,930	13,717	3,429	7.4
Principal Buyers:								
Norway	8,980	5,479	1,370	6.9	12,073	7,845	1,961	7.4
Sweden	8,594	5,046	1,262	6.7	5,506	3,691	923	7.6
1/ Includes West Berlin. Data are preliminary.								

a pound), c.i.f. Rotterdam, and United States oil is quoted at \$113 (5.1 U.S. cents a pound), same basis; however, very few sales are transacted at these prices.

The largest British buyer and user bought 50,000 metric tons of whale oil early this year at about £50 per long ton (6.3 U. S. cents a pound), c.i.f. Rotterdam.

Mounting pressure is exerted on oil prices by 220,000 tons of unsold whale oil. Under prevailing conditions, margarine manufacturers are unwilling to pay more than \$110 a ton (5.0 U.S. cents a pound) for Peruvian oil. (U.S. Consulate, Bremen, March 9, 1962.)

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of the principal buyers of oil from West Germany. Norway in 1961 bought 42.7 percent of Germany's exports of oil as compared to 57.7 percent in 1960; Sweden in 1961 bought 40.9 percent as compared to 26.3 percent in 1960. (March 9, 1962, report from the United States Consulate, Bremen.)

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FISH MEAL PRICES,
MARCH 7, 1962:

Prices reported at Hamburg Commodity Exchange as of March 7, 1962, for fish meal delivered ex-Hamburg warehouse, or c. & f. West German sea port were as follows:

German Federal Republic (Contd.):

Type of Fish Meal	Protein Content (%)	Delivery	DM/Metric Ton <u>1/</u>	US\$/Short Ton
Danish herring	72-75	Loco	765.00	173.50
South African	65-70	May-Oct, 1962	620.00	140.62
German	50-55	prompt/Mar. 1962	630.00	142.88
"	55-60	" " "	640.00	145.15
"	60-65	" " "	650.00	147.42
Peruvian	65-70	" " "	610.00	138.35
"	65-70	Apr. 1962	610.00	138.35
"	65-70	May-Dec, 1962	592.50	134.38
Angola	65-70	Mar. 1962	680.00	154.22
Icelandic herring	70-75	prompt/Mar. 1962	765.00	173.50
" cod	65-70	Mar.-Apr. 1962	747.50	169.54
1/ Values converted at rate of 4.0 deutsche marks equal US\$1. Note: "Loco" means where and as it is at the time of sales, and all subsequent expenses to be at buyer's account.				

From February 2 to March 7 prices at the Hamburg Exchange showed a mixed trend. Prices for Peruvian fish meal weakened and were substantially lower early in March than a month earlier. On the other hand, prices for German, South Africa, and Angolan meal rose during that same period. (United States Consulate, Bremen, report of March 9, 1962.)



Ghana

GOVERNMENT AUTHORIZES IMPORTS OF JAPANESE PRODUCTS:

According to information received by the Japan Export Trade Promotion Agency's (JETRO) representative stationed in Ghana, the Ghanaian Government on February 23, 1962, issued licenses permitting imports from Japan during the first six months of 1962. The licenses issued cover applications received as of September 15, 1961, and apply to importation of all kinds of products from Japan.

The Ghanaian Government usually does not publicly announce the total value authorized for import but investigations show that the value of Japanese products authorized for import may total close to G£5 million (US\$14 million). Total value of Japanese imports authorized by the Ghanaian Government in 1961 is estimated at G£14 million (\$39.2 million). Imports from Japan for 1960 were valued at G£10,830,000 (\$30.3 million), 1959--G£8,580,000 (\$24 million), and 1958--G£6,780,000 (\$19 million).

The granting of import licenses by the Ghanaian Government is expected to expedite trade negotiations on Japanese canned fish

products for export to Ghana, which had been suspended since October 1961. However, since the total value of imports authorized for the 6 months period in 1962 amounts to 35 percent of the total value of imports authorized in 1961, exports of Japanese canned fish to Ghana this year are expected to be less than 40 percent of last year's total canned fish export, which amounted to between 70,000 and 100,000 cases of canned jack mackerel, canned sardine, and canned saury. It is expected that the bulk of the Japanese canned fish products to be exported to Ghana will be fish packed in tomato sauce in 5-ounce tall cans.

Prices of Japanese canned sardines were recently reduced 100 yen (US\$0.28) per case, from 2,400 yen (\$6.67) to 2,300 yen (\$6.39). Canned saury is priced at 2,220 yen (\$6.17) per case. Therefore, it is believed that negotiations to export canned saury will be very difficult in view of the price differential of only 80 yen (\$0.22) per case between canned sardine and canned saury.

Japan is expected to first export canned jack mackerel, of which there are approximately 35,000 cases in stock, at 1,950 yen (\$5.42) per case, then canned sardine, of which there are about 25,000 cases in stock. (Suisan Tsushin, February 28, 1962.)



Greece

FROZEN FISH INDUSTRY:

According to the Union of Hellenic Overseas Fishing Enterprises, Greece's total consumption of frozen fish during 1961 reached a total of 17,532 metric tons as against 12,082 tons in 1960. This considerable in-

Greece (Contd.):

crease was due to the introduction of frozen fish into the markets of the interior of the country, as a result of extensive promotion by large fishing enterprises.

A total of 7,551 tons of frozen fish was imported during 1960. But in 1961 imports totaled 4,844 tons. The decrease in imports was due to: (1) the increase in production by Greek ocean freezer-trawlers; and (2) the smaller profit in handling imported frozen fish since increased production reduced prices.

During January 1962, four Greek freezer-trawlers landed 1,430 tons of frozen fish as against December 1961 landings of 1,930 tons and January 1961 landings of 1,120 tons.

During the last part of 1961 and the first part of 1962 there was a substantial price drop in frozen fish because of the increased production by Greek freezer-trawlers operating on the fishing grounds off the northwest coast of Africa. The large Greek fishing firms operating freezer-trawlers are concerned about the drop in prices because it has resulted in the curtailment of Greek fishing expansion. (Alieia "Fishing," February 1962.)



Guatemala

SHRIMP FISHING VESSEL LICENSES BEING GRANTED:

An official of the Department of Hunting and Fishing of the Guatemalan Directorate General of Forestry states that licenses to conduct shrimp fishing operations in Guatemala are currently being granted. He added that applications for such licenses had to be prepared on official sealed paper valued at 10 cents a sheet, and that these applications had to correspond to the procedures set forth in Decree 1470 of June 23, 1961. (United States Embassy, Guatemala, report of March 9, 1962.)



Iceland

FISHERY TRENDS, MARCH 1962:

Trawler Tie-Up: The Icelandic trawler strike began March 10, 1962, as threatened. The state mediator has entered the dispute, which remains deadlocked. As of March 15 the trawlers were still tied up. The owners proposed publicly a reduction in the number of crew members and a change of watches or shifts, with 12 hours of work followed by 6 hours of rest, instead of the present 6 hours of work followed by 6 hours of rest. Most owners escaped the effects of the strike temporarily by having their vessels leave port just prior to the strike.

Aid to Trawlers: On the same day that the Government introduced a bill to aid agriculture, it also proposed an important measure to assist the trawler industry. The proposal would be financed by an existing fisheries catch guarantee fund which is supported by an export tax of 1.25 percent on the catch of the motorboats. Further financing would come from a similar export tax based on the f.o.b. value of fish exports from the trawlers. The estimated total of 35 million kronur (US\$813,000) per year would be increased by a 50-percent matching payment from the Icelandic Treasury. A particular feature of the bill is payment of 60 million kronur (\$1.4 million) to the Icelandic trawlers for their operations in 1960 and 1961, or 1.5 million kronur (\$34,800) per trawler for the two-year period.

The critical trawler question has been hotly debated. Shortly after this bill was placed before the Althing, the Minister of Fisheries commented that the trawlers will not be permitted to operate within Iceland's 12-mile fishing limit. The new bill is designed to compensate them for part of their losses sustained as a result of being excluded from those protected waters. Like the bill on reorganization of the agricultural funds, this one attempts to meet an emergency deficit situation with a minimum of immediate impact on the Treasury.

Frozen Fish Sales to U.S.S.R.: On March 9, the Icelandic press announced signature of a trade protocol by representatives of the Soviet and Icelandic Governments calling for sale of 18,000 metric tons of frozen fish fillets to the U.S.S.R. in 1962. Of that total, 13,000 tons will be cod and 5,000 tons ocean perch, with some substitutions permitted of

Iceland (Contd.):

haddock, coalfish or pollock, and catfish.
(United States Embassy, Reykjavik, report of
March 15, 1962.)

UTILIZATION OF FISHERY LANDINGS, JANUARY-NOVEMBER 1961:

How Utilized	1961	1960
	.. (Metric Tons) ..	
Herring/1/ for:		
Oil and meal	194,636	98,758
Freezing	16,824	6,914
Salting	63,450	20,882
Fresh on ice	4,582	998
Canning	114	-
Groundfish/2/ for:		
Fresh on ice landed abroad	28,947	23,852
Freezing and filleting	138,561	193,479
Salting	67,174	73,019
Stockfish	46,048	54,865
Home consumption	7,734	8,074
Oil and meal	3,610	6,418
Shellfish for:		
Freezing: Lobster	1,490	1,870
Shrimp	932	-
Canning (shrimp)	249	-
Total production	574,351	489,132
1/Whole fish.		
2/Drawn fish.		

PROJECT FOR COMMON MARKET FISH PLANT DROPPED:

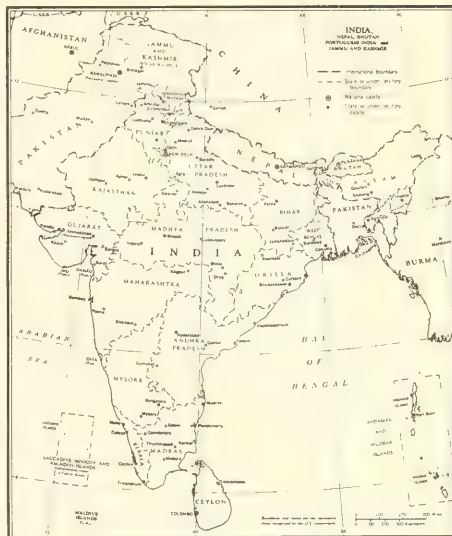
On January 14, the press announced that the Freezing Plants Corporation had dropped its long-standing plan to build a fish distribution and processing plant for the EEC area in Holland (the European Economic Community or Common Market area in the Netherlands). The Export-Import Bank had already approved a loan of \$250,000 for the project. (United States Embassy, Reykjavik, January 18, 1962.)



India

UNITED STATES COLLABORATION SOUGHT FOR NEW FISH AND SHRIMP PROJECT:

Financial and technical collaboration was being sought in March 1962 by a fisheries cooperative association of Ahmadabad, India, for a commercial fisheries project it plans to establish at Okha Port on the Saurashtra coast of Gujarat State, India. The project envisages the employment of five medium mechanized vessels to exploit the shrimp resources of the Gulf of Kutch and two trawlers to carry on offshore fishing in the Arabian Sea. In addition, two transport launches are proposed to be bought to bring fish landed in the adjoining fish harbors by other fishermen.



The project will, moreover, include the establishment of fish canning, quick freezing, cold-storage, and fish meal plants. Besides exploiting the domestic markets in the principal cities such as Bombay and Delhi, efforts will also be directed to export processed fish to the United States, Germany, and other foreign countries.

It is estimated that the project will need an investment of Rs.3,200,000 (US\$672,000) of which the equivalent of Rs.1,568,000 (\$329,280) or approximately 49 percent will be required in foreign exchange for the purchase of trawlers, marine engines, and machinery for the canning, freezing, storage, and fish meal plants. The association has proposed that this foreign exchange component be provided by the American investor. In return, he will be allotted an equivalent share in the equity capital of a new company which will be organized to undertake the project. The rupee investment, estimated at Rs.1,632,000 (\$342,720) will be raised by the association.

The American investor will also be expected to assist in obtaining the services of a fishery engineer, two masters for the trawlers, and a fishery technologist. He will be, furthermore, given the franchise for sales in the United States.

The association's paid-in capitalization is Rs.600,000 (\$126,000) of which Rs.450,000 (\$95,000) has been subscribed by the Government of Gujarat. The balance has been contributed by fishermen cooperatives and individual fishermen. The association is mainly a marketing organization but deals also in fishermen's supplies. It claims to handle nearly 28 percent of the fish caught in Gujarat State.

Except for one joint Indo-Japanese enterprise in Bombay City, there are no other commercial fishing ventures

India (Contd.):

on the Maharashtra and Gujarat coasts. The Gulf of Kutch is believed to offer considerable scope for shrimp fishing. The association is said to be one of the largest fishermen's cooperatives in India. (United States Consulate, Bombay, report of March 15, 1962.)



Italy

FISHING INDUSTRY ASSOCIATION APPROVES EUROPECHE CHARTER:

The Executive Committee of FEDERPESCA (National Federation of Fishermen and Fishing Companies) approved the Statute of EUROPECHE (European Federation of Fishing Enterprises) on February 27, 1962. It was expected to be ratified by the Executive Committee of EUROPECHE at the end of March. The headquarters of EUROPECHE is to be in Brussels. EUROPECHE, which is composed of national fishery organizations, will seek to bring about agreement on common fishery problems within the Common Market or EEC and to keep the organs of the EEC informed about the points of view of national fishery organizations.

FEDERPESCA also decided to prepare a memorandum asking the Italian Government for relief from fiscal burdens and for financial assistance to the industry, and urging the Government to support the "Blue Plan," which involves industrialization of the fishing industry, development of cooperatives, and expansion of Italian fishing into the Atlantic. (United States Embassy, Rome, March 9, 1962, report.)



Ivory Coast

JOINT JAPANESE-ITALIAN TUNA BASE PLANNED:

A large Japanese fishing company and an Italian firm (with offices in Milan) are planning to establish a joint fishing base at Abidjan, Ivory Coast. An application has been submitted for approval of the venture to the Ivory Coast Government. Upon receiving approval from the Government, the Japanese firm will proceed to work out details of the proposed undertaking.

Under this plan, the Japanese firm and the Italian firm will jointly establish a cor-

poration with a capital of US\$320,000, each company contributing 50 percent. The Japanese firm reportedly will invest two 39-ton tuna vessels, valued at \$160,000, and will also export two other tuna vessels to the joint corporation. Annual tuna landings at the new base are expected to total approximately 2,400 metric tons of albacore and yellowfin tuna, which will be sold to the French freezer company located in Abidjan, which will then ship the tuna to France.

The Japanese firm has received approval of the Japanese Investment Liaison Council for this undertaking and plans to work out details as soon as the Ivory Coast Government permits sale of securities. (Shin Suisan Shim-bun Sokuho, March 28, 1962.)

* * * * *

TUNA FREEZING AND STORAGE PLANT READY FOR OPERATION:

A new tuna freezing and storage plant at Abidjan, Ivory Coast, early in March 1962 was ready for operation. Construction was started in September 1961. The plant was built by a large United States west coast tuna canning firm.

The main building consists of a room containing freezing brine tanks, a cold-storage room measuring 80 x 100 ft., the necessary compressors in an adjacent room, and two ice-making machines on the roof. Outlying structures will include a T-shaped wharf, an office building (completed), a warehouse (under construction), and a diesel oil storage tank (was expected to be started in mid-March). The plant will employ approximately 50 men on a permanent basis and 20 to 30 "casuals" for stevedoring. The operation will be similar to the same firm's wholly owned tuna freezing and storage plant in Freetown, Sierra Leone.

Fish will be received from various Japanese, Spanish, and French vessels operating off the coast of West Africa, which will dock at the inner part of the wharf. The fish will be unloaded into the freezing brine tanks and then segregated and stored by species (skipjack, big-eyed, and other varieties of tuna and swordfish) in the storage room. Refrigerated carrier ships (primarily from Hamburg, Germany) will dock at the outer wharf and will pick up cargoes of frozen tuna for Italy, Puerto Rico, and the United States.

The plant is owned by the Societe Generale Industrielle de la Peche (SOGIP). Fifty percent of the firm's stock is held by the United States cannery firm and 50 percent by a Milan, Italy, firm which is affiliated with the Discount Bank of Israel, a Swiss bank.

Another related enterprise is the Societe Ivoirienne de la Peche (SOIP), which is owned 50 percent by the Milan firm and 50 percent by a Japanese fishing firm. At the moment SOIP owns four vessels operating out of Abidjan, but considerable expansion is anticipated. A third company envisaged for the future will be owned jointly by the Milan firm and Societe d'Equipe pour l'Afrique (SEA) and will undertake canning and distribution of the fish in the Ivory Coast and nearby countries. This project, however, is not expected to begin operations for several years. (United States Embassy, Abidjan, report of March 13, 1962.)



Japan

1962 QUOTAS FOR FROZEN TUNA EXPORTS TO UNITED STATES SET:

The Board of Directors of the Japan Export Frozen Tuna Producers Association held a meeting on March 8, 1962, and adopted the proposals it had drafted at its February 21 meeting on 1962 frozen tuna exports to the United States, according to a translation from the Japanese periodical *Suisan Tsushin* of March 8-10, 1962. Adoption of these proposals means that the following export production quotas will be in effect in 1962 (April 1, 1962-March 31, 1963):

Frozen tuna exports to United States from Japan proper: (1) Frozen albacore tuna quota - 30,000 short tons; (2) frozen yellowfin tuna quota - 35,000 short tons; (3) tuna loin quota - 5,000 short tons.

Atlantic Ocean transshipments: Fishing vessels delivering their catches for transshipment to the United States will be limited to an aggregate total of 120 fishing trips. Number of trips each fishing vessel can make will depend on its cargo-carrying capacity.

At the February 21 meeting, a special adjustment quota of 5,000 tons was proposed and the use of the special quota was to be clarified at the March 8 meeting. Two days prior to this meeting, on March 6, the committee assigned to study this problem was unable to resolve differences regarding use of the special quota. Some segments of the tuna industry wanted to apply half of the 5,000 tons for transshipments from the Indian Ocean and half for direct exports from Japan proper, while others wanted to apply all of it for transshipments from the Indian Ocean. Responsibility of determining allocation of this proposed special 5,000-ton quota was then turned over to a special committee.

At the March 8 meeting, the Board of Directors of the Producers Association adopted the proposal of this special committee. Briefly, this proposal calls for a transshipment quota of 4,000 short tons for the Indian Ocean, with shipments from the Indian Ocean exceeding this amount to apply to the quota covering direct exports to the United States from Japan proper. Fishing vessels operating in the Indian Ocean delivering their catches at a specified base for transshipment to the United States are to be limited to one trip, or the equivalent of 150 tons of frozen tuna. Of the 4,000-ton quota, the Association's Board of Directors will control use of 1,500 tons and determine when they can be used. Furthermore, the Association agreed not to grant increases in the Indian Ocean transshipment quota for 1962.

Approval of transshipments from the Indian Ocean eliminates the long return trip to Japan which fishing vessels had to make and it is estimated that the cost of frozen tuna for export to the United States will be reduced \$10 to \$15 per short ton.

Considerable speculation is now going on within the Japanese tuna industry as to which port in Southeast Asia will be designated as port of transshipment. Penang is said to be most suitable. The joint Malayan-Japanese canning enterprise located at Penang presently operates a 200-ton capacity cold-storage plant. However, there is the problem as to whether the firms intimately connected with the Japanese company, which operates the joint company in Penang, would permit other exporters to utilize facilities at Penang. Also, these firms are reported to have established priority on available space on regularly scheduled freight vessels calling at Penang.

Facilities at the port of Singapore are considered to be inadequate. For one thing, the cold-storage plant is located far away from the docks, besides being very small. It is likely that ports in Sumatra and Ceylon may be considered. Until such time that a port of transshipment is designated, a scramble among exporters in selecting a port can be anticipated.

Note: See *Commercial Fisheries Review*, March 1962 p. 42.

EXPORTERS ASSOCIATION PROPOSES OVER-ALL FROZEN TUNA EXPORT QUOTA TO UNITED STATES:

The Board of Directors of the Japan-Frozen Foods Exporters Association met on March 8, 1962, and proposed the following quotas of frozen tuna and frozen swordfish for export to the United States in 1962 (April 1962-March 1963):

1. Frozen tuna export quota shall be 110,000 short tons. This quota shall be allocated to exporters with established records for the period April 1958 to March 1961 inclusive.

2. Frozen tuna loin export quota shall be 5,000 short tons. Of this quota, 4,500 tons shall be allocated to exporters with established records for the period of April 1959 to March 1962 inclusive; 450 tons shall be set aside for adjustment purposes, and 30 tons held in reserve.

3. Frozen swordfish export quota shall be 6,500 short tons.

The proposals were to be submitted for approval to the special general meeting of the Exporters Association scheduled for March 19. (Translated from Japanese periodical *Suisan Tsushin*, March 9, 1962.)

Editor's Note: The basic difference between the export quotas proposed by the Producers Association and the Exporters Association for allocation to their respective association members is that the Exporters Association has one over-all export target, without limiting exports of any one species of tuna. In other words, exporters are willing to accept from producers any species of tuna available for export.

FROZEN TUNA OCEAN FREIGHT RATE TO UNITED STATES REDUCED:

The Japan Frozen Foods Exporters Association has been negotiating with the Pacific Ocean Freight Conference for quite some time concerning reduction of freight rates for frozen tuna shipped to the United States. As a result, the Conference recently announced its decision to provisionally reduce frozen tuna freight rates from the present \$57.75 per short ton to \$50 per ton, to be effective for the period March 15-September 30, 1962. (*Suisan Tsushin*, March 16, 1962.)

Japan (Contd.):

TUNA RESEARCH COUNCIL PROPOSES LARGE-SCALE TUNA RESEARCH PROGRAM:

The Japanese National Tuna Research Council, a quasi-governmental organization established in 1961 to strengthen bonds between existing tuna organizations through government and industry cooperation and to promote tuna research and tuna technology, held its second meeting on February 28, 1962. Members of the three technical departments of the Council—biological research, gear research, and technology—met jointly for the first time at this meeting. The following research programs were adopted by the three departments:

Biological Research: (1) Changes in tuna fishing conditions in the Indian Ocean and the Pacific Ocean: Data on changes in fishing conditions will be systematically collected and compiled, and yearly changes in fishing conditions in those areas will be studied. Five-year program. Cost FY 1962 (April 1962–March 1963), 300,000 yen (US\$833). (2) Yearly changes in size composition of Atlantic Ocean yellowfin and albacore tuna: Yearly changes in size composition of yellowfin and albacore tuna taken from the Atlantic Ocean will be investigated and results combined with existing data on yearly changes in hook rates. Based on this combined study, causes of yearly changes in catches and in size composition will be investigated. Continuous program. Cost FY 1962, 230,000 yen (\$639).

Technical (Gear Research) Department: (1) Development of fish scanner to study tuna ecology: A fish scanner will be developed for use in studying tuna ecology. One-year program. Cost FY 1962, 300,000 yen (US\$833).

(2) Research on driving away killer whales by sound: Reaction of killer whales to sound will be studied, and based on this, methods will be devised to study their responses with the idea of either dispersing them or attracting them so they can be captured and killed. Effect that such measures will have on other fish will be investigated. Two-year program. Cost FY 1962, 600,000 yen (\$1,667).

(3) Vertical distribution of tuna and behavior of tuna long-line gear under water as determined by means of fish scanners: Fish scanners will be used to trace behavior of tuna long-line gear under actual fishing conditions and to study vertical distribution of tuna. One-year program. Cost FY 1962, 303,750 yen (\$844).

(4) Operation of tuna long-line gear: A study will be made to improve and simplify fishing operations and to increase efficiency and prolong durability of fishing gear. Three-year program. Cost FY 1962, 200,000 yen (\$555).

(5) Development of fish scanner for use in studying tuna ecology: A basic study will be made of existing fish scanners with respect to supersonic wave output, emission frequency, wave angle, and installation, and a special scanner for tuna fishing shall be developed. Program commenced March 1962 and will end March 1963. Cost, 300,000 yen (\$833).

(6) Method of dispersing killer whales by sound: A sounding device will be tested and a practical method of driving away killer whales developed, and said method shall then be offered to the fishing industry. Program started March 1962 and will end March 1963. Cost, 300,000 yen (\$833).

Technology Department: (1) Research on tuna muscle extracts: Changes occurring in muscle extracts during processing or during decomposition will be analyzed and effect of muscle extracts on flavor and "browning" will be studied. Program to start June 1962 and end December 1964. Cost, 240,000 yen (\$667). (2) Utilization of poor quality tuna: Utilization of tuna meat of poor quality for fish sausage will be studied: Program to start June 1962 and end August 1963. Cost, 255,000 yen (\$708).

A total of ten members attended the Council meeting. They included key officials from the National Federation of Tuna Fisheries Cooperative Associations, Japan Fisheries Society, and the Fisheries Agency. They voted to grant 1,650,000 yen (\$4,600) to subsidize the research program for FY 1962. (*Suisan Keizai Shinbun*, March 3, 1962; *Shin Suisan Shinbun*, March 5, 1962.)

EXPORT COUNCIL ADOPTS FY 1962 EXPORT TARGETS FOR CERTAIN FISHERY PRODUCTS:

The Fisheries Division of the Japanese Agricultural and Marine Products Export Council met on March 23, 1962, and adopted export targets for Fiscal Year 1962 (April 1962–March 1963), according to a translation from the Japanese periodical *Suisan Tsushin* of March 24, 1962.

Japanese Export Targets for Certain Fishery Products, FY 1962 with Comparisons				
Commodity	Quantity		Value	
	Fiscal Year			
	1962 1/	1961 2/	1962 1/	1961 2/
	.. (Metric Tons) ..		.. (US\$1,000) ..	
Frozen tuna	149,000	130,780	50,110	43,510
Frozen swordfish	7,700	7,712	5,600	5,671
Agar-agar	600	451	1,920	1,746
Salted fishery products	6,910	5,363	6,000	5,426
	.. (In Pounds) ..		.. (US\$1,000) ..	
Cultured pearls	124,000	135,750	35,250	37,832
1/April 1962 to March 1963.				
2/April 1961 to March 1962. Some of the figures represent estimates.				

CANNERS SET 1962 CANNED TUNA IN BRINE EXPORT QUOTA:

The Japan Export Canned Tuna Packers Association convened a special general meeting on February 27–28, 1962, and adopted the following proposals concerning canned tuna in brine for export to the United States in 1962 (April 1962–March 1963):

1. The 1962 quota of canned tuna in brine for export to the United States shall be 2,300,000 cases. Of this amount, 1,500,000 cases will be allocated to producers on the basis of their past performance records and 800,000 cases unassigned.

2. The unassigned quota of 800,000 cases will be released as follows: April–June 320,000 cases, July–December 320,000 cases, January–March 1963, 160,000 cases.

3. The total export quota of 2,300,000 cases shall consist of 60 percent canned white meat tuna and 40 percent canned light meat tuna. Exports of canned white meat

Japan (Contd.):

must not fall below 40 percent of total exports, and exports of canned light meat tuna must not exceed 60 percent of total exports.

4. The following proportions of different types of canned tuna in brine shall be exported:

White meat tuna:	Percent
No. 1 (13-oz.) 24's	20
No. 1/2 (7-oz.) 48's	55
4-lb. 6's	25
Light meat tuna:	
No. 1 (13-oz.) 24's	20
No. 1/2 (7-oz.) 48's	45
4-lb. 6's	35

The Packers Association also decided at this meeting that exports of canned tuna to the United States other than canned tuna in brine and canned tuna in oil will be permit-

of 5° N. latitude, and east of 110° W. longitude south of 5° N. latitude) is somewhat larger than some circles in Japan had anticipated. According to the Fisheries Agency, it is not possible to make a good estimate of the amount of tuna taken by Japanese vessels fishing in that area inasmuch as catch data are not complete. However, it is estimated that somewhere around 5,000 metric tons of tuna are caught by Japanese tuna long-liners, mostly vessels in the 250-ton class, fishing in the proposed regulatory area. (Translation of a news item in the Japanese periodical Suisan Keizai Shimbun, March 3, 1962.)

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1960 TUNA LANDINGS FROM PACIFIC OCEAN ESTIMATED AT 530,000 METRIC TONS:

A member of the Tokai University's Fisheries Research Laboratory, who is attempting to estimate total catch of tuna-like fish in the Pacific Ocean and Indian Ocean, calculates

1960 Landings of Tuna and Tuna-like Fish from Pacific Ocean by Countries								
Species	Japan	U.S.	Peru ^{1/}	Ecuador ^{1/}	Mexico ^{1/}	Australia ^{1/}	Formosa ^{1/}	Total
	(Metric Tons)							
Bluefin.....	16,368	5,439	-	-	-	2,250	-	24,057
Skipjack.....	78,606	32,768	10,527	-	-	-	-	121,901
Bonito.....	-	-	14,202	-	-	-	-	14,202
Albacore.....	52,037	19,088	-	-	-	-	-	71,125
Yellowfin.....	2/ 91,852	99,304	-	-	-	-	-	191,156
Others.....	77,356	15,565	7,850	4,278	1,758	-	537	107,344
Total.....	316,219	172,164	32,579	4,278	1,758	2,250	537	529,785
^{1/} Data based on export figures and locally-consumed tuna not included.								
^{2/} Includes big-eyed tuna and spearfish.								

ted when it is ascertained that such products will not be cleared through United States Customs under the same category as canned tuna in brine. The Association also decided to raise the check price of canned white meat tuna in oil for export to Canada by \$0.50 a case, from \$8.65 a case for No. 1/2 (7-oz.) 48's, f.o.b. Japan, to \$9.15 per case. (Suisan Tsushin, February 23, and March 1, 1962.)

* * * * *

that 1960 landings from the Pacific Ocean totaled approximately 530,000 metric tons and from the Indian Ocean 100,980 metric tons, which included 48,676 tons of Indian Ocean bluefin tuna.

Calculations are based on data from the Japanese Fisheries Agency, United States catch statistics, and data collected directly from Japanese fishing vessels. Indian Ocean catches include only those made by Japanese fishing vessels. Pacific Ocean landings, which were grouped by species and by country, are shown in the table. (Suisan Keizai Shimbun, March 1, 1962.)

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ESTIMATED TUNA CATCH IN EASTERN PACIFIC:

The Japanese Fisheries Agency announced on March 1, 1962, details of the bill being considered by the United States Congress to regulate the catch of yellowfin tuna in the eastern Pacific Ocean. The proposed regulatory area (east of 120° W. longitude north

TUNA EX-VESSEL PRICES:

February 26, 1962: The following ex-vessel prices were paid for 210 tons of frozen tuna and tunalike fish landed in Tokyo by a Japanese tuna vessel, according to a translation of a news item in the Japanese periodical Suisan Keizai Shimbun, February 28, 1962.

Japan (Contd.):

Product	Price	
	Yen/Kg.	\$/Short Ton
Yellowfin (gilled & gutted):		
Special lge. (over 120 lbs.)	95	239
Large (100-120 lbs.)	114.2	288
Medium (80-100 lbs.)	123.5	311
Small (20-80 lbs.)	123.5	311
Albacore (round)	135	340
Fillets:		
Yellowfin	120.2	303
Big-eyed	108	272

* * * * *

March 7, 1962: The following ex-vessel prices were paid for 568 metric tons of frozen tuna and tunalike fish, including sharks, landed in Tokyo by two Japanese tuna long-line fishing vessels, according to a translation from the Japanese periodical Suisan Keizai Shimbun of March 9, 1962.

Product	Price	
	Yen/Kg.	\$/Short Ton
Yellowfin (gilled & gutted):		
Large (over 100 pounds)	115.0	290
Med. (80-100 pounds)	123.1	310
Sml. (20-80 pounds)	123.3	311
Fillets:		
Indian bluefin	94.5	238
Yellowfin	117.8-120.6	297-304
Big-eyed	103 -106.2	260-268

* * * * *

RECORD SIZE BLUEFIN TUNA SOLD FOR \$1,000:

A large bluefin tuna landed by a Japanese long-liner fishing in the Indian Ocean is claimed to be the largest bluefin ever landed by a Japanese fishing vessel. The fish weighed 880 pounds and was sold to the "sashimi/" trade for 360,000 yen (US\$1,000). (Suisan Keizai Shimbun, March 20, 1962.)

1/"Sashimi" is raw fish thinly sliced and flavored with soybean sauce. Many different types of marine fish are eaten as "sashimi," but bluefin tuna "sashimi" is considered best.

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FISHERY LANDINGS AT YAUZU:

February 1962: A total of 10,839 metric tons of fish valued at 1,035 million yen (US\$2.9 million) was landed at Yaizu (leading Japanese tuna fishing port) during February 1962, according to a translation from the Japanese periodical Suisan Keizai Shimbun of March 8, 1962. This was an increase in landings of 1,900 metric tons and in value

of 176 million yen (US\$489,000) over February 1961.

Yaizu Fishery Landings, Principal Species, February 1962 with Comparisons				
Species	Landings		Average Ex-Vessel Price	
	1962	1961	1962	1961
	(Metric Tons)		(US\$/Short Tons)	
Bluefin	6,254	6,904	272	239
Albacore	1,978	1,199	313	237
Skipjack	257	6	179	222
Mackerel	1,592	859	78	134

* * * * *

1961: Because canneries, manufacturers of fish ham and sausage, and producers of other traditional Japanese fishery products are located in Shizuoka Prefecture, the fishing port of Yaizu continued to hold its leading position. Also, Yaizu supplies fish daily to such large cities as Tokyo and Osaka. The value of landings at the Yaizu fish market in 1961 established the highest record since its establishment. According to the Yaizu Fish-

Yaizu Fishery Landings in 1961 by Principal Species		
Species	Metric Tons	US\$1 Million
Albacore	16,518	5.3
Other tuna	63,473	18.2
Skipjack	27,326	5.9
Mackerel	8,654	1.1
Others	9,680	1.3
Total 1961	125,651	\$31.8
Total 1960	118,414	\$28.7

eries Cooperative, actual landings in 1961 were valued ex-vessel almost US\$31.8 million, surpassing substantially the previous highest record value of \$28,611,000 in 1960. This was attributed to increased tuna landings, which make up the bulk of the total landings at Yaizu. Skipjack tuna fishing in 1961 was good generally and the value of the catch was high in spite of a low price per ton. In quantity, the landings in 1961 exceeded the previous year by 7,200 metric tons. (Suisan Keizai Shimbun, January 13, 1962.)

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TREND TO ESTABLISH JOINT OVERSEAS BASES TO EXPORT FROZEN TUNA TO UNITED STATES:

The Japanese Fisheries Agency recently affirmed its intention to authorize the Japanese fisheries company, which manages the joint Japanese-Malayan tuna fishing and canning company at Penang, to annually export up to 6,000 short tons of frozen tuna to the United States from the base at Penang. This plan, which the Japanese fisheries company has been pushing for quite some time, calls for the operation of ice-packing fishing vessels from the Penang base. Iced tuna landed by the vessels would then be frozen at shore facilities at Penang for export to the United States.

Japan (Contd.):

The Penang freezer plant reportedly has a maximum daily freezing capacity of only five tons, so its annual production of frozen tuna would not be more than 1,825 tons, even if the plant operates at full capacity every day. Therefore, fresh fish landed by the ice boats alone cannot possibly meet the annual 6,000-ton quota. Moreover, it is not likely that the vessels of about 100 tons would operate near Madagascar, where the main fishing grounds are located, because of the great distance. Thus, a strong possibility exists that this 6,000-ton quota will be filled by utilizing frozen tuna landed by clipper vessels operating out of Penang, which was recently selected as a transshipment base.

Observers feel that the Fisheries Agency cannot grant preferential treatment only to the Japanese firm operating the Penang base. If requests to export tuna to the United States should be submitted to the Agency by other firms, the Agency would also have to grant those firms permission. Thus, the Agency's recent action in authorizing the transshipment of 6,000 tons of frozen tuna to the United States from Penang can be said to have started a trend towards the establishment of joint companies overseas for the purpose of exporting frozen tuna to the United States.

The joint company at Espiritu Santo, New Hebrides, is considered typical of joint companies established for the purpose of exporting frozen tuna to the United States. This joint company is reported to be facing difficulty in contracting for ice boats to fish for it, since ex-vessel prices at Espiritu Santo, in contrast to prices at Samoa, are low. On the other hand, the Espiritu Santo base is much closer to the tuna fishing grounds than the Penang base, and so the Japanese firm operating the Penang base is expected to experience difficulty in making sufficient profit to erase its accumulated deficit by relying on catches of ice boats alone. Eventually, it will have to rely on clipper-caught tuna for export to the United States.

Should this happen, then other firms which have established joint companies overseas can be expected to utilize tuna clipper at their overseas bases. Also, if the Fisheries Agency should authorize establishment of the large tuna base planned for Levuka, Fiji Islands, and permit that base to utilize medium vessels without tuna fishing licenses, as presently proposed, then it is quite foreseeable that in the near future tuna clipper, as well as medium vessels without tuna fishing licenses, will come to be utilized at joint overseas bases. (Suisan Tsushin, March 31 & April 2, 1962.)

PENANG AND SINGAPORE DESIGNATED AS TRANSSHIPMENT PORTS FOR INDIAN OCEAN FROZEN TUNA:

The Japan Export Frozen Tuna Producers Association on March 22, 1962, formally designated Singapore and Penang as ports of transshipments for tuna caught in the Indian Ocean, and Abidjan, Ivory Coast, as a port of transshipment for the Atlantic Ocean. Earlier, the Association had established a frozen tuna transshipment quota of 4,000 short tons for the Indian Ocean.

The Japanese Fisheries Agency is somewhat concerned over the fact that the Association had enacted regulations which permit transshipments from the Indian Ocean on an expanded scale before the Agency had even completed its opinions on this matter. The Agency had intended to permit only the Japa-

nese firm which operates the joint Malayan-Japanese tuna-canning plant at Penang to transship Indian Ocean tuna to the United States for the purpose of putting that company back on its feet. (Suisan Tsushin, March 23, and 26, 1962.)

SKIPJACK TUNA SURVEY IN INDIAN OCEAN REVEALS FISH ARE SMALL:

The Shizuoka Prefectural research vessel Fuji Maru (191 gross tons) which was chartered by the Japan Overseas Fisheries Cooperative Association in December 1961 to survey the Indian Ocean waters off Ceylon, Nicobar Islands, and the Maldiv Islands for skipjack tuna, was scheduled to return to Japan after mid-March. According to the senior member of the vessel's survey team, who returned to Japan by plane, the Fuji Maru operated principally in the waters off the Maldiv Islands except for one cruise made off Ceylon, at which time tilapia and anchovies were used in a bait-feeding experiment. Results of this test revealed anchovies to be superior to tilapia as bait.

The currents off the Maldiv Islands were fast, thus making it impossible to approach close to the Islands. Skipjack seemed to congregate when tides were up but did not seem to be abundant. Fish were of comparatively small size. Skipjack taken off Ceylon averaged about 5.7 pounds each; those off the Maldiv Islands about 4 pounds each.

Bait fishing was not very successful but this may have been due to the poor quality of the bait obtained locally, as well as bait carried on board the research vessel, and the fact that they had to be used sparingly. On the return trip from the Maldiv Islands, 309 skipjack were taken without use of any bait.

The Maldiv Islands fishing fleet consists of about 50 vessels employing hook-and-line gear, of which 15 to 25 are powered. Others use sails. Catches are exported to Ceylon but fish quality appeared poor. A cold-storage plant of about 3,500-ton capacity is located on the Islands. (Shin Suisan Shimbun Sokuho, February 28, 1962.)

AUSTRALIAN AND INDIAN BLUEFIN TUNA FOUND TO BE IDENTICAL:

A technician of the Nankai-ku Fisheries Research Institute in Yaizu, Japan, has veri-

Japan (Contd.):

fied that the species, one called Indian bluefin tuna and the other Australian bluefin tuna, are the same. The two "types" have been studied for three years. The data of the study will be sent to the headquarters of the Institute and eventually will be disseminated to the fishing industry.

Indian bluefin are caught in waters off the west coast of Australia and off Java, and their fishing ground was discovered in 1952. They are mostly large fish weighing 88-221 pounds each. The fish called Australian tuna were discovered in 1956 and caught on fishing grounds off the east coast of Australia. The fish were small, weighing 22-88 pounds each, but the meat is of higher quality than that of the Indian tuna. In spite of the fact that they are segregated as Indian tuna and Australian tuna, depending upon where they are caught, their appearance is almost identical.

The technician began his study in November 1960 in order to determine whether the two types of bluefin tuna are the same. Specimens of each type measuring 4 feet 2 inches, 4 feet 9 inches, and 5 feet 5 inches were selected from landings at Yaizu and the following measurements obtained: (a) the length of the head, (b) length from the tip of the mouth to the first dorsal, (c) length from the tip of the mouth to the second dorsal, (d) length from the tip of the mouth to the pelvic, (e) length from the tip of the mouth to the end of caudal, (f) the length of the pelvic, and (g) the size of the eye. For three years a total of 720 fish, 120 of each size and kind, were compared. The maximum difference found was very small when the same body lengths were compared.

In the past, yellowfin and albacore were checked by the same method and it was found that there was only one species of yellowfin and one species of albacore tuna.

As a result of the study, it has been established, almost without a doubt, that the same kind of bluefin tuna are found in the western part of the Indian Ocean and waters east of Australia as off the southern coast of Australia. Judging from the size and the quality of meat, the fish that are young and having meat of good quality migrate to the sea area off the east coast of Australia round its southern coast. As the fish grow, they re-

turn to the sea area off the Indian Ocean side where water temperatures are higher. Also, when they grow old enough to spawn, they are believed to move to the waters off Java where water temperatures are even higher and abundant plankton is available.

The technician commented that the similarity of Indian tuna and Australian tuna has always been suspected and the study has finally confirmed this theory. If the fish are definitely found to be migrating from the southern coast of Australia, it is possible that fishing grounds may be formed in that sea area also and catches on the east side of Australia may possibly affect fishing in the waters off the Indian Ocean side of the Continent. (Translation from a February 16, 1962, Japanese periodical.)

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TUNA FLEET:

Data compiled by the Japanese Fisheries Agency on tuna vessels licensed as of December 31, 1961, reveal that a total of 1,301 vessels were licensed to engage in tuna fishing. Classified by types of vessels, they include 409 medium vessels between 40-100 tons gross, 621 distant-water vessels over 100 tons gross, 6 portable-vessel-carrying motherships, 215 vessels engaged in tuna fishing on a part-time basis, and 50 vessels diverted from the salmon fishery.

As of March 1962, there was a total of 17 portable-vessel-carrying motherships (an increase of 11 vessels of that type), 621 distant-water vessels (which is the maximum allowed for that category), and 396 medium vessels.

Extension of fishing grounds to distant waters and the economic advantages of constructing larger vessels have brought about a decline in the number of medium vessels. This trend is evident because the number of medium vessels engaged in tuna fishing, as per the latest data, has declined by 226 vessels from 1957 and by 112 from 1960. (Suisan Keizai Shimbun, April 1, 1962.)

Editor's Note: Vessels under 40 tons gross do not require fishing licenses.

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FISHING COOPERATIVE FORMED FOR FIJI ISLANDS TUNA BASE:

The South Pacific Ocean Fisheries Cooperative, which is to manage the joint Anglo-

Japan (Contd.):

Japanese fishing base at Levuka, Fiji Islands, upon its establishment, held its inaugural meeting on March 12, 1962, in Japan and elected officers.

The Cooperative, which presently consists of 25 members, was provisionally organized to lay the groundwork for the Fiji Islands fishing base. The Cooperative plans to apply for permission to form into a legal corporation under the Fisheries Cooperative Law in or about December of this year. It had originally planned on commencing base fishing operations in February 1963. However, commencement of operations is expected to be postponed owing to the delay in applying for incorporation. (Suisan Keizai Shimbun, March 13, 1962.)

FISHERIES AGENCY'S POSITION ON OVERSEAS CANNERIES:

The Chief, Fisheries Section, Japanese Fisheries Agency, at a board meeting of the Japan Canned Tuna Packers Association explained the Agency's attitude on developments involving the joint Japanese-Malayan tuna-canning company established at Penang, Malaya. That firm has been given special permission to export canned tuna in brine to the United States, and it is also seeking to export frozen tuna directly to the United States.

The Fisheries Chief stated that the Japanese firm which owns the Malayan Marine Industries would like to see its Malayan firm engage primarily in exporting frozen tuna to the United States, and secondarily engage in the production of canned tuna. Other large fishing companies have stated that they would like to establish tuna canneries overseas but the Fisheries Agency's policy is not to approve such construction, and the Agency has had all large fishing companies pledge they will not construct tuna-canning facilities overseas. A joint tuna-fishing enterprise is being planned for the South Pacific, but the Agency does not intend to approve this enterprise if it is to include a canning plant.

The Fisheries Agency is presently consolidating ideas concerning tuna exports. A rough draft concerning this subject has already been completed. Although it cannot yet be made public, in essence, it is a plan which seeks to increase tuna exports, and,

very likely, efforts will be made to seek the lowering of United States tariffs on imports of canned tuna. Also, measures are now being studied concerning high ex-vessel prices paid for tuna landed in Japan in relation to tuna landed at foreign ports by Japanese fishing vessels, thus putting a squeeze on Japanese canners. (Suisan Tsushin, March 2, 1962.)

LARGE STERN TRAWLER EN ROUTE TO ATLANTIC:

The Japanese stern trawler Unzen Maru (2,525 gross tons) left Japan for the Atlantic Ocean trawl fishing grounds off the northwest coast of Africa on March 13, 1962. The trawler, which was completed in February 1962, has a complement of 53 men. (Nippon Suisan Shimbun, March 19, 1962.)

FISHING FIRM HOPES TO OPERATE MOTHERSHIP-TYPE TRAWLER FLEET IN ATLANTIC:

A Japanese fishing company hopes to send a bottomfish mothership trawler fleet to the Atlantic Ocean off West Africa and in February 1962 was sounding out the Fisheries Agency's view on the matter. If the Agency should grant approval, the firm plans to undertake preparations in May 1962 to dispatch the Awazu Maru (8,000 gross tons) and 6 trawlers of the 80-ton class to the West African waters. (Nippon Suisan Shimbun, February 23, 1962.)

TWELVE TRAWLERS REPORTED IN ATLANTIC OCEAN:

As of the end of February 1962, Japanese trawlers were operating in two areas in the Atlantic Ocean, off the coast of northwest Africa in the vicinity of the Canary Islands and off the coast of South Africa.

Reports indicated that a total of 10 Japanese trawlers were operating off the West African Coast. The bottom fish grounds off the South African coast were being fished by two trawlers of one Japanese firm only--the No. 56 Taiyo Maru (744 gross tons) and the No. 62 Taiyo Maru (1,481 gross tons). But they were to be joined by the No. 61 Taiyo Maru (489 gross tons) which in February 1962 was fishing in New Zealand waters. (Nippon Suisan Shimbun, February 26, 1962.)

Japan (Contd.):

SAUDI ARABIA AND LEBANON SEEK JOINT FISHING VENTURE WITH JAPAN:

The Japanese Overseas Fisheries Cooperative Association held a meeting on March 20, 1962, to report on the results of fishery surveys it had recently conducted in Lebanon and Saudi Arabia. According to the Association, both Saudi Arabia and Lebanon are seeking Japanese cooperation in developing their fishing industry.

A Saudi Arabian firm wants to establish jointly with Japan, a cannery, freezer, cold-storage, an ice-making plant, and a fish-meal plant, and is seeking offers from Japan.

Lebanon is also seeking Japanese assistance in developing its fishing industry and is hoping that Japan would conduct trial fishing operations off the coast of Lebanon.

The Association plans to contact its members to promote these ventures and also plans to recommend fishery promotional measures to the Saudi Arabian Government on the basis of its recent survey, which was conducted during February 10-March 12, 1962, and financed by the Japanese Ministry of International Trade and Industry. (Suisan Keizai Shimbun, March 21, 1962.)

NORTH PACIFIC 1962 SALMON FISHERY PLANS:

The Japanese Fisheries Agency announced late in March that Japan plans to table at the current Japan-U. S. S. R. fisheries negotiations at Moscow a document proposing a voluntary curtailment of Japan's salmon fishing effort in the North Pacific for 1962, according to a report from Tokyo. The proposal calls for a 10-percent retrenchment of the 1961 salmon catcher boat fleet which operated north of 45° N. latitude and a 20-percent cutback for vessels of the land-based fleet which fished south of 45° N. Under the plan 133 boats would be eliminated from the 1962 salmon fisheries.

Considerable opposition to the plan is being voiced by the catcher boat operators. However, the North Pacific Mothership Fisheries Council has notified the Fisheries Agency of its decision to eliminate one mothership from its fleet of 12 which operated in 1961.

The Sixth Annual Meeting of the Northwest Pacific Fisheries Commission (Japan-U. S. S. R.) convened in Moscow on February 26, 1962, and as of March 23 was still in session. (United States Embassy, Tokyo, March 23, 1962.)

ASSIGNMENT OF SALMON VESSELS TO TUNA FISHING PROPOSED:

The Japanese Fisheries Agency Director on March 7, 1962, submitted a request to the salmon industry requesting cooperation in reducing operations of the salmon mothership fleet and the Eastern Hokkaido land-based fleet. Specifically, he recommended that the number of catcher vessels assigned to the salmon motherships be reduced by 10 percent from last year's 410 vessels and the land-based Eastern Hokkaido fleet operating south of 45° N. by 20 percent from last year's 414 vessels.

Fishing vessels removed from the salmon fishery are expected to be allowed to engage in tuna fishing or bottom fishing and fall king crab fishing in the Eastern Bering Sea. Press reports indicate that the National Federation of Tuna Fishing Cooperative Associations strongly objects to this proposal. The Federation contends that the Fisheries Agency always seems to be assigning fishing vessels displaced from some other fishery to the tuna fishery, which is becoming highly competitive, and is concerned over this trend.

Speculation is going on in Japan regarding the possibility that some of the 122 salmon vessels which most likely will be retired from the salmon fishery, despite the salmon industry's objection, may sign up to participate in Japanese plans to establish a large tuna fishing base at Levuka, Fiji Islands. The salmon vessels are less than 100 tons gross and fall within the range of medium tuna vessels (40-100 tons). The tuna base proposed for Levuka calls for the utilization of 65-ton vessels.

Interest in tuna fishing developments in the South Pacific is growing and this interest is heightened by reports that Japanese firms which have agreements to deliver tuna to Samoa and to Espiritu Santo, New Hebrides, have requested the Fisheries Agency that their quotas be increased. (Translated from the Japanese periodicals Suisan Shimbun

Japan (Contd.):

Sokuho, March 19; Suisan Keizai Shimbun, March 17, 1962; and other sources.)

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CHANGES RECOMMENDED IN FISHING VESSEL CONSTRUCTION SUBSIDY PROGRAM:

The Japanese Agriculture and Forestry Ministry has negotiated with the Finance Ministry concerning revision of the fishing vessel construction loan program. The Agriculture and Fisheries Loan Corporation, a Government agency, has undertaken a study of loan procedures for the fiscal year which began April 1, 1962, and was expected to present the following recommendations to the Fisheries Agency.

1. Increase vessel construction loans to 70 percent of total construction cost. Present limit, 60 percent.
2. Establish a maximum construction loan of 80 million yen (US\$222,000). Present limit, 60 million yen (US\$167,000).
3. Increase to a maximum of 2,000 tons the total tonnage that a vessel owner can own in order to qualify for a loan. Present limit, 1,000 tons; in exceptional cases 1,500 tons.

Purpose of relaxing the loan requirements is to enable fishing vessel owners to construct larger steel vessels and thus improve their economic base. The Agriculture and Forestry Ministry hoped to implement this new regulation from April 1, if negotiations with the Finance Ministry proceeded favorably. However, past experiences involving such negotiations indicate that a final settlement will not likely be reached until July or August this year. (Suisan Keizai Shimbun, March 6, 1962.)

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FISH HAM AND SAUSAGE QUALITY STANDARDS:

The Japanese Agriculture and Forestry Ministry early this year adopted quality standards for fish sausage and fish ham in accordance with the Agriculture and Forestry Products Standards Law. They became effective on March 1, 1962. Based on the standards, fish ham and fish sausage will be graded and assigned scores according to col-

or, flavor, and texture, according to a translation from the Japanese periodical Suisan Keizai Shimbun, February 25, 1962.

Fish Ham: Definition: Fish meat (including whale meat and meat of aquatic animals other than fish) seasoned with salt, or a mixture consisting primarily of fish meat mixed with pork, beef, horse meat, mutton, rabbit meat, or poultry meat seasoned with salt, and combined with binding meat (consisting primarily of ground fish meat, to which have been added additives such as oil, flavoring, and starch to give it binding strength), and packed in a casing, then sealed and steamed.

Fish Sausage: Definition: Ground fish meat or a mixture consisting primarily of ground fish mixed with ground pork, beef, mutton, horse meat, rabbit, or poultry, to which have been added additives such as oil, seasoning, and starch for binding strength, packed in a casing and sealed, then steamed or boiled. Contents may be smoked before packing in casing.

Standards: Quality will be graded on a point system for appearance, flavor, and texture. Average score must be higher than 3.0 points and for each category a score higher than 1 point must be scored.

1. Appearance:

- a. Contents must not be deformed.
- b. Seal must be perfect.
- c. Contents must not be damaged.
- d. Separation must not occur between casing and content.
- e. Contents must not be pressed into sealed portion of casing.

2. Starch content: Must be less than 9 percent for fish ham and less than 10 percent for fish sausage.

3. Other substances: There must be none.

4. Net weight: Net weight must correspond with weight indicated on package.

5. Label:

- a. Packing date must be clearly indicated.
- b. Names and addresses of manufacturer and distributor must be shown.
- c. Words and pictures must correctly describe contents and must not convey misleading impression.

Japan (Contd.):

Grading Method: Fish ham and fish sausage will be graded as follows:

COLOR SCORE:

- 4 to 5 points - Contents are appropriately colored; pigments in the meat used for binding purposes are not noticeable; color of casing has not discolored contents.
- 3 points - Coloring of contents generally acceptable; pigments in binding meat almost unnoticeable; color of casing has not noticeably discolored contents.
- 2 points - Contents excessively colored; pigments in binding meat slightly discolored and noticeable; color of casing has noticeably discolored contents.
- 1 point - Contents considerably discolored; color of casing has deeply penetrated contents.

FLAVOR SCORE:

- 4 to 5 points - Contents have no peculiar odor and are deliciously flavored and seasoned.
- 3 points - Contents have no peculiar odor; flavor and seasoning generally satisfactory.
- 2 points - Contents have slightly raw or slightly scorched odor; flavor and seasoning somewhat inadequate.
- 1 point - Contents have strong peculiar odor and have markedly low flavor.

TEXTURE SCORE:

- 4 to 5 points - Contents have consistency and resilience, texture smooth; no oil or liquid separation; no air spaces in contents.
- 3 points - Contents have consistency and resilience; texture fairly smooth; practically no oil or liquid separation; small air spaces in contents.
- 2 points - Contents lack consistency and resilience; texture less smooth; certain amount of oil and liquid separation has occurred; contents con-

THREE FIRMS TO JOINTLY ESTABLISH FISH NET PLANT IN AFRICA:

Three Japanese firms were reported in March 1962 to have concluded arrangements with an Indian firm in east Africa to establish a joint fish-net manufacturing plant. For quite some time one of the three firms had been seeking such an arrangement through negotiations with the Indian firm located in Dar es Salaam, capital of Tanganyika. Discussions have now progressed to the stage where the Indian firm is scheduled to shortly send a representative to Japan to work out final details and conclude a contract with the Japanese firms.

The new company will be organized with a capital of 60 million yen (US\$167,000), with two of the firms each contributing 10 million yen (US\$28,000), and the third 5 million yen (US\$14,000), and the Indian firm investing 35 million yen (US\$97,000). The plant is already equipped with 20 net-weaving machines and is mainly manufacturing gill nets. In the near future, the company plans to increase the number of net weaving machines to 60 units. (Suisan Keizai Shimbun, March 11, 1962.)

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ESTIMATED 1962 CANNED SARDINE EXPORTS:

The Japan Export Canned Sardine Packers Association early in March 1962 tentatively adopted a production quota of 1,005,000 cases of export canned sardines for FY 1962 (April 1, 1962-March 31, 1963), according to a translation from the Japanese periodical Suisan Tsushin, March 6, 1962. Export canned sardine sales during FY 1962 are expected to total 700,000 cases.

Estimated Japanese Canned Sardine Exports for FY 1962					
Destination	Can and Case Sizes				Total
	1-lb. Oval 48's	8-oz. Oval 96's	5-oz. Tall 100's	8-oz. Oblong 96's	
	(In 1,000 Cases)				
Philippines	230	60	-	10	300
West Africa	30	30	90	-	170
Europe	40	60	-	30	130
North, Central & South America	20	-	-	-	20
Other countries	40	30	10	-	80
Total	360	200	100	40	700

tain numerous small air spaces but relatively few large air spaces.

- 1 point - Contents have softened; considerable separation of oil and liquid; pack has become slimy and contents contain numerous large air spaces.

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ESTIMATED CANNED JACK MACKEREL EXPORTS FOR 1962:

The Japan Export Canned Jack Mackerel Packers Association tentatively adopted a

Japan (Contd.):



Packing and washing mackerel prior to stowing it in the hold.

production quota of 1,000,000 cases of canned jack mackerel for export in FY 1962 (April 1, 1962-March 31, 1963), according to a translation from the Japanese periodical Suisan Tsushin, March 6, 1962.

Estimated Japanese Canned Jack Mackerel Exports for FY 1962									
Destination	In Tomato Sauce				Natural				Total
	1-lb. 8-oz.		5-oz.		1-lb. 5-oz.		1-lb.		
	Oval	Tail	Oval	Tail	Oval	Tail	Oval	Tail	
(In 1,000 Cases)									
Singapore & Malaya	50		75	55					210
West Africa	10	20	90		20				140
Near & Middle East		20							20
Ceylon					15	15	30		30
Indonesia	10	15							25
Borneo	5	5	10		5				25
New Guinea	10						10	20	20
Others	15	10	5	5	5	5	5	5	45
Total	100	100	180	65	40	30	515		515

STATUS OF VOLUNTARY EXPORT CONTROLS TO WESTERN HEMISPHERE:

The status as of December 26 of Japanese voluntary export controls (i.e. quotas, check

prices) applicable to commodity shipments, excepting cotton textiles, to the United States and the Western Hemisphere became available the latter part of 1962.

The information on the commodities affected by voluntary Japanese export controls was obtained from the Ministry of International Trade and Industry (MITI), industry, and export association sources. After consolidation, it was finally checked with the MITI export section. Only those commodities were included on which the existing export controls appeared to be primarily for the purpose of maintaining orderly marketing abroad.

Presently, Japanese exports are controlled under two basic authorities: the Export Trade Control Order (Cabinet Order No. 378 of December 1, 1949) and the Export and Import Transactions Law (Law No. 299 of August 5, 1952) with its implementing regulations. Both require that certain listed commodities receive MITI validations for export. Many of these items receive automatic validation or are not otherwise controlled for the specific purpose of avoiding unfair export practices. These have not been considered here.

MITI has classified the commodities under voluntary export control into two general categories: (a) government imposed "voluntary" export controls and (b) voluntary agreements among exporters or within trade associations to control exports, which are not required by law or government regulation and are subject only to general government approval. MITI validation is required for all shipments of commodities falling under the first category and this is usually accomplished by the submission of validation requests through exporters' associations. However, there appears to be no hard and fast procedural rule

Status of Japan's Voluntary Minimum Price and Export Quota Controls on Commodities Destined for Western Hemisphere Countries, December 1961

Commodity	Designated Administering Organization	Destination	Nature of Controls	Remarks (See Footnotes)
Marine Products:				
Albacore, frozen	Japan Frozen Foods Exporters' Ass'n	United States and Canada	Quantity	(A)
Oyster spat	Exporters' agreement	United States and Canada	Price	(C)
Pearls	Japan Pearl Exporters' Association	All Destinations	Price and quality	(B)
Swordfish, frozen	Japan Frozen Foods Exp. Ass'n	North, Central, and South American countries	Quantity	(B)
Tuna, canned	Japan Canned Foods Exp. Ass'n	United States	Quantity and variety	(A and B)
Tuna, canned in oil	Japan Canned Foods Exp. Ass'n	Canada	Price	(A)
Tuna, loin and disc, frozen	Japan Frozen Foods Exp. Ass'n	United States and Canada	Quantity	(A and B)
(A) Government-imposed control under authority of the Export Trade Control Order (Cabinet Order No. 378, December 1, 1949). Approval for export can be obtained either by direct submission of request to MITI or through association.				
(B) Government-imposed control under authority of the Export and Import Transactions Law (Law No. 299, August 5, 1952) and implementing regulations. Controls are administered by the association with MITI approval. Exporters not members of the association must submit export applications direct to MITI.				
(C) Exporter or trade association voluntary control under authority of Export and Import Transactions Law. Establishment of control approved by MITI.				

Japan (Contd.):

for in some cases MITI has delegated total responsibility for enforcing the control to exporters' associations. Those companies not members of associations must submit the requests directly to MITI. Controls for this category are exercised under authority of either the Control Order, the Transactions Law, or both.

With regard to the voluntary exporters' controls, these are permitted under the Transactions Law which established the legal basis for such agreements. The exporters entering into such agreements need only report to MITI on the establishment of a voluntary export control agreement and get its approval. Requests for MITI validation of individual shipments are not required on these commodities. MITI has indicated that its information on this latter category is far from complete since it suspects that considerably more private export control agreements are made than are reported officially.

MITI has stated that "check prices," as MITI defines them, are now being gradually eliminated. MITI regards "check prices" as those which it itself administers, not the exporters. These are being abandoned in favor of the more easily controllable quantity checks. A considerable number of private voluntary minimum price agreements among exporters will probably be retained, however. (United States Embassy, Tokyo, report of December 20, 1961.)



Korea

LAWS DRAFTED TO ENCOURAGE FISHING INDUSTRY DEVELOPMENT:

Several laws designed to facilitate and encourage economic development of South Korea's fishing industry were drafted and as of February 1962 were under high-level consideration. Included are laws to reduce the taxes assessed against a fisherman's gross catch and establish fisheries cooperatives. Also included is more progressive Fisheries Law. Combined taxes which formerly amounted to as much as HW98,000 (US\$75.38) for each HW1,000,000 (\$769.23) worth of catch are reported to have been reduced to HW20,000 (\$15.38) effective January 1, 1962.

On October 1 the Office of Marine Affairs was abolished, and the Bureau of Fisheries was transferred to the Ministry of Agriculture and Forestry. (United States Embassy, Seoul, report of February 2, 1962.)



Mexico

FISH MEAL PLANT GRANTED TAX EXEMPTIONS:

A Mexican fish meal plant in Ciudad del Carmen, Campeche, has been granted (Diario Oficial of February 2, 1962) certain tax exemptions under the Law for the Development of New and Necessary Industries. The exemption is for seven years and includes:

- a. All import duties on construction materials for erecting buildings, repair shops, storehouses, offices, and other installations necessary for the unit; machinery, machines, equipment, spare parts, tools, safety equipment for treating water; air conditioning equipment, and equipment or machinery necessary for producing power;
- b. The stamp tax;
- c. The Federal portion of the tax on mercantile income, if applicable;
- d. 30 percent reduction on income tax (Cedula II).

The plant is required to produce fish meal with a minimum protein content of 60 percent. Furthermore, foreign payments for acquiring or obtaining the use of foreign patents, trade marks or commercial names, and technical assistance, whether in the form of gifts, participation in production, sales or profits, and foreign payments in interest, in dividends, or in any other form whether in kind, surety, credit, or cash are limited to three percent of annual sales. (United States Embassy, Mexico, report of April 2, 1962.)

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BRAZILIAN FREEZER-FISHING VESSEL BEING BUILT IN MEXICO:

A combination freezer-fishing vessel of original design is being built in Tampico, Mexico, for use in northeastern Brazil. Besides being a combination freezer-fishing vessel, she will be a combination fishing vessel adapted to catch spiny lobsters, shrimp, and snappers. The vessel is scheduled for delivery the last of August 1962. She will be 70 feet long with an 18 foot beam. The main engine will be 200 hp. and the auxiliary 45 hp. The hull and house will be steel and the deck wood.

Interesting features are: a box keel 18 inches wide by 12 inches high (containing the cooling system) to provide greater stability when the boat grounds at low tide; a removable mast and boom aft the trawling mast for carrying a steady sail while snapper fishing; a special boom for hauling lobster pots; ten handreels for snapper fishing; freezing capacity for two tons of lobster tails daily; special bulb on rudder to add more speed; automatic pilot with remote control; radio direction finder; two radios, one 250 watts and the other 65 watts; two 100-fathom depth finders, one recording and the other visual; and two wooden lobster dories 18 feet long with 8 hp. inboard Diesels.

Insulation of the freezing compartment and hold will be six inches of expanded polystyrene.

Mexico (Contd.):

The boat will carry about 300 knocked-down lobster pots made of galvanized wire with a plastic coating. Built to the American Bureau of Shipping Standards, about 75 percent of the material used to build the vessel will be Mexican made. (United States Embassy, Mexico, report of April 2, 1962.)



Netherlands

IMPORT DUTIES ON CERTAIN FISHERY PRODUCTS CHANGED:

The Netherlands early this year listed certain changes in import duties of selected food products, including certain fishery products. The changes involved imports from other

increase its share of investment, which presently amounts to approximately 50 million yen (US\$139,000). The Japanese firm's officials feel that it is only a matter of time before the Lagos enterprise is approved by the Japanese Government, said approval hinging only on an agreement being worked out between the Cooperative Fund and the firm.

Reportedly, the Japanese firm will share its 30 percent investment with a Japanese steel import-export firm, with each firm contributing an equal share of the total Japanese investment of 50 million yen.

As soon as approval is granted, the Japanese firm plans to commence operations, employing six trawlers (each of approximately 100 tons gross) and expects to produce annually between 6,000-8,000 metric tons of croaker and other species for delivery to the local Nigerian market at 60,000 yen (US\$167) per metric ton. The Japanese firm also plans to construct a 500-ton capacity cold-storage plant at Lagos and has applied for a loan of 500 million yen (US\$1,389,000) from the Cooperative Fund to finance its construction.

The Lagos base will be the first Japanese fishing venture to be undertaken in Nigeria and, as such, has drawn considerable attention, particularly since the Nigerian Government has welcomed establishment of the joint base at Lagos since it would promote domestic fish consumption and also reduce

Netherlands' Import Duties for Certain Fishery Products^{1/}

Tariff No.	Description	Third Countries		EEC	
		Prev. Tariff	New Tariff	Prev. Tariff	New Tariff
		(Percent)			
	Chapter 16: Preparations of Meat, of Fish, of Crustaceans or Molluscs.				
	Prepared or Preserved Fish, incl. Caviar and Caviar Substitutes:				
	B. Salmonidae:				
	I. Salmon in airtight containers	0	6	0	0
	II. Other:				
	a. In airtight containers	20	20	16	14
	b. Not specified	25	23.5	20	17.5
16.04					
16.05	Crustaceans and Molluscs, Prepared or Preserved:				
	A. Shrimps, merely boiled and peeled, not preserved	0	6	0	0
	B. Other	25	23.5	20	17.5

^{1/}Does not include all fishery products.

European Economic Community countries and third countries. Imports from the United States fall under the "third countries" category. (January 29, 1962, report from the United States Embassy, The Hague.)

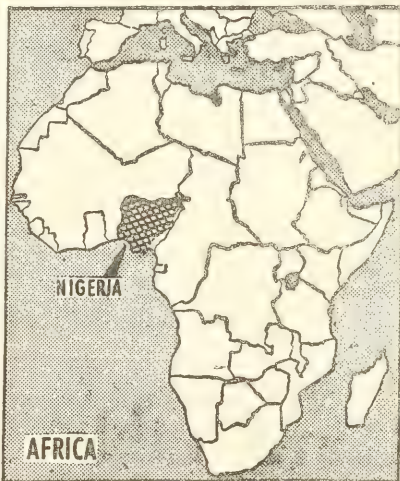


Nigeria

JAPANESE FIRM'S PROSPECTS OF NIGERIAN FISHING BASE IMPROVE:

A large Japanese fishing company's plan to establish a joint trawl fishing base at Lagos, Nigeria, equipped with cold-storage facilities has been held up owing to difficulties in obtaining a loan from the Economic Cooperative Fund. Indications are that as soon as the firm reaches an agreement with the Cooperative Fund, the Japanese Ministry of Finance and the Ministry of International Trade and Industry will approve the plan.

Present plans call for the Japanese firm to contribute 30 percent of the total capital investment and the Nigerian firm 70 percent. The Cooperative Fund fears that this ratio of investment would place the Japanese at a great disadvantage in the event that the Nigerian firm fails to procure necessary funds, and the Cooperative Fund wants the Japanese firm to



Nigeria (Contd.):

Nigeria's dollar purchases. (Shin Suisan Shimibun Sokuho, March 7, 1962.)



Norway

WINTER HERRING FISHERY FAILS AGAIN:

Continuing the trend which started in 1957, the migratory winter herring schools reached the Norwegian coast later, farther north, and in smaller numbers than the year before. The fishery finally got under way about March 1, 1962, and up to March 9, when the "large" herring season was declared ended, the catch had amounted to only 27,000 metric tons. Since March 9, after which the herring are known as "spring" herring, and up to March 15, another 34,000 tons had been landed.

Rapidly drawing to a close in March, the 1962 winter herring catch ("large" and "spring" herring combined) was expected not to exceed a total of 70,000 tons. This means still another year of virtual failure for this fishery which five years ago ended the season with a catch of more than one million tons.

Since the fishermen had expected a very poor winter herring catch this year, relatively few took part in the fishery. The majority of those who would normally participate chose to concentrate on other fisheries. As a result, the failure of the winter herring fishery again in 1962 has caused less financial hardship among the fishermen than was the case in the preceding years. (United States Embassy, Oslo, report of March 21, 1962.)

LARGEST FISH CANNING PLANT EXPANDING:

Norway's largest packer of canned fish, including brisling and sild sardines, kippers and herring tidbits, is building a new, ultra-modern, integrated plant at Stavanger. When finished, the complex of buildings will cover almost 4 acres. A similar expansion and modernization program is in progress at the company's nine other canning factories elsewhere in Norway.

The new warehouse, equipped with lift trucks to utilize the height, can store 200,000 cases. The fully automated labeling department has a capacity of 220,000 cans per 9-hour working day. The freezing department, due to be ready in time for the next brisling season, will have a freezing capacity of about 24 tons a day, with storage for 1½ months production at the Stavanger plant. (News of Norway, April 5, 1962.)

TRAWLERS MAY FISH IN 4-6 MILE BELT OF FISHING LIMITS ZONE:

Following a long debate, the Storting gave its approval on January 11, 1962, to the recommendations of the Ministry of Fisheries regarding special rights for Norwegian trawlers to fish inside Norway's 12-mile fishing limits boundary. The particular area in dispute was the belt between 4 and 6 miles from the coast. There was no question of granting any rights inside the 4-mile limit or of denying any rights outside the 6-mile limit.

In accordance with the new regulations, which are to be in force for a temporary period of unspecified duration, small trawlers (up to 300 gross registered tons) will be permitted to fish in the 4 to 6 mile belt. Larger Norwegian trawlers up to 500 g.r.t. which have previously fished in the zone may continue to fish there, but no new concessions will be given for vessels in this group. No trawlers above 500 g.r.t. will be permitted inside the 6-mile zone.

TRAWLERS REQUIRED TO INCREASE NET MESH SIZE:

Also on January 11, 1962, the Storting proved legislation making it compulsory for all Norwegian trawlers, wherever they may operate, to increase the net mesh size to 130 millimeters (about 5.1 inches) in their light trawls and to 140 millimeters (5.5 inches) in their heavy trawls. This action was taken to demonstrate Norway's serious concern over the excessive catches of undersize fish in the North Atlantic and adjacent areas, and to set an example for other nations to follow. At present the international convention governing calls for a minimum mesh size of 120 millimeters (4.7 inches). (United States Embassy, Oslo, report of January 19, 1962.)

Norway (Contd.):

COST OF BUILDING
WOODEN FISHING VESSELS:

The Secretary of the Norwegian Boat Builders Association in Oslo states that a wooden fishing trawler, 80 feet long, over-all, fully equipped, costs about 600,000 Norwegian kroner (US\$84,000). The vessel would cost about 50,000 kroner (\$7,000) more if made of steel. Prices are based on vessels with 240 to 300 hp. motors. About as many trawlers of this size are constructed of wood as of steel. The vessels are built to specifications of the Directorate of Fisheries and the Association. (Regional Fisheries Attache, United States Embassy, Copenhagen, January 31, 1962.)



Philippines

BIDS INVITED ON CANNED SARDINES:

The National Marketing Corporation (NAMARCO) of the Philippine Islands planned to purchase canned sardines on a bid basis and invited foreign firms to submit bids on March 12, 1962. NAMARCO plans to import a total of 407,500 cases of canned sardines.

Types of Canned Sardines Philippines Plans to Import		
Can Sizes	In Tomato Sauce	Natural
1-lb. oval	146,500	-
8-oz. tall (buffet-style)	98,000	-
5-oz. tall	127,000	-
1-lb. tall	-	36,000
Total	371,500	36,000

Japanese exporters planned on bidding only for the 1-lb. oval and 5-oz. tall packs. However, reports indicated that South African packers were planning to offer their products 40 cents to one dollar below Japanese prices. (Translated from the Japanese periodical Suisan Tsushin, March 12, 1962.)

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SOUTH AFRICAN FIRMS LOW
BIDDERS ON SALE OF CANNED
SARDINES TO PHILIPPINES:

South African packers are reported to have made the lowest bids for the 407,500 cases of canned sardines which the National Marketing Corporation (NAMARCO) of the Philippine Islands offered to buy by March 12, 1962.

Bids Placed by South African and Japanese Firms
for Sale of Canned Sardines to the Philippines

Bidder	In Tomato Sauce		Buffet Style In Brine	
	1-Lb. Oval	5-oz. Tall	5-oz. Tall	1-Lb. Tall
South Africa: six firms	7.60	6.75	4.25	5.75
Japan: one firm	7.79	7.32	-	-
14 other firms	8.06	7.62	-	-

Among the Japanese bidders, one firm made a surprisingly low bid. However, the Japan Canned Sardine and Saury Sales Company does not recognize prices below \$8.06 for 1-lb. oval packs and below \$7.62 for 5-oz. tall packs, and would be expected to refuse to release those packs to the firm even if the company is awarded a sale. (Suisan Tsushin, March 14, 1962.)



Portugal

CANNED FISH PACK, 1961:

The Portuguese pack of canned fish in oil or sauce in 1961 increased 2,687 metric tons or 7.0 percent as compared with 1960. Sardines again accounted for the bulk of the pack in 1961 with 80.7 percent, followed by anchovy fillets with 6.6 percent, and tuna with 5.8 percent. Compared to 1960, in 1961 the pack of

Portuguese Canned Fish Pack, 1961				
Product	1961		1960	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	60,616	3,190	57,929	3,054
Chinchards	2,252	118	1,879	99
Mackerel	3,211	128	492	19
Tuna and tunalike	4,375	156	5,335	191
Anchovy fillets	4,985	498	3,919	392
Others	247	13	650	34
Total	75,686	4,103	70,204	3,789

sardines was up 4.6 percent and the pack of anchovy fillets was up 27.2 percent. But in the same period the pack of tuna and tunalike dropped 18.0 percent. (Conservas de Peixe, February 1962.)

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CANNED FISH EXPORTS, 1961:

Portugal's export tonnage of canned fish in 1961 was up 12.0 percent as compared to 1960. Sardines accounted for 82.8 percent of the 1961 exports, followed by anchovy fillets with 7.1 percent, and tuna with 4.4 per-

Portugal (Contd.):

cent. In 1961 the export tonnage was up for all the canned products listed separately except canned tuna. Exports of tuna dropped 6.0 percent because the pack was down. Exports of sardines were up 10.5 percent, chinchards 31.8 percent, and anchovy fillets 21.3 percent.

Portugal's principal canned fish buyers in 1961 were Germany with 18,333 metric tons, followed by the United States with 7,913 tons, United Kingdom with 7,584 tons, Italy 6,016 tons, Belgium-Luxembourg 4,616 tons, and France 4,520 tons. Exports to the United States were up 14.8 percent from the 6,890 tons in 1960. (*Conservas de Peixe*, February 1962.)

Portuguese Canned Fish Exports, 1961				
Product	1961		1960	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	60,538	3,186	54,790	2,883
Chinchards	2,282	120	1,731	91
Mackerel	1,605	64	503	20
Tuna and tunalike	3,226	115	3,432	123
Anchovy fillets	5,195	519	4,284	428
Others	247	13	397	20
Total	73,093	4,017	65,137	3,565

Note: See *Commercial Fisheries Review*, March 1962 p. 54, May 1961 p. 60.

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COD FISHERMEN'S INCOME FOR 1962/63 SEASON INCREASED:

Portugal's cod fishermen who fish the Newfoundland and Greenland Banks will be receiving a provisional raise in pay this season. The terms of their employment are set forth in a collective wage contract now nearly 10 years old, which has been amended piecemeal through the years and is due for a complete revision in 1963. A committee of representatives of the cod shipping owners in March 1962 was studying proposals for the contract, to be negotiated next year with the Casas dos Pescadores, representing the fishermen, and Government delegates.

For the 1962/63 season the estimated increases are: trawlers, officers 5 percent and fishermen 10 percent; line fishing vessels, officers 5 percent and fishermen 30 percent.

Specific amounts for the increases would be misleading, because for all personnel the pay depends in part on the catch, and in the

earnings of the line fishermen the catch is a key factor. In the case of both officers and men, pay is in two parts: (1) a fixed annual payment and (2) a variable payment, or bonus based on the amount of the vessel's catch, and for line fishermen only, the size of the individual's catch. No change is being made this season in the fixed salary payment, but bonuses have been increased, particularly those payable to the most efficient line fishermen. The increase this year might amount to as much as 50-60 percent for the best line fishermen.

In recent seasons, the fixed wage for fishermen has usually been 6,000 escudos (\$210), and their total payments per season, including bonuses, have averaged roughly 16,000 to 17,000 escudos (\$560 to \$595) for line fishermen and about 25,000 escudos (\$875) for fishermen on the trawlers. It should be recalled that the season for the line fishermen (though their work is much harder) runs about six months, whereas the trawlers operate for about 9-10 months. (The source for the information was the Guild of Codfish Vessel Owners, as reported by the United States Embassy, Lisbon, March 14, 1962.)



South Africa Republic

FISH MEAL, OIL, AND SOLUBLES PRICES, MARCH 1962:

The local prices of South and South-West African fish meal and fish solubles early in March 1962 were reported steady at the prices reported in the last quarter of 1961: both sold at R76 (US\$106.40) per short ton free on rail. This price was fixed by the South African Government in 1956.

For export, by the end of January 1962 all estimated fish meal production for 1962 was sold or committed. Fixed prices were agreed on for roughly 75 percent of the expected minimum production of 200,000 short tons which will be available for export (less about 20,000 short tons for domestic consumption). It is reported that with world fish meal prices rising and firming, there is considerable regret inside the South African fishing industry that so much was sold in October and November 1961 at the lower prices then prevailing.

The export price of fish meal sold to the United Kingdom's big buyers the latter part of 1961 for delivery during the period January through June 1962 was 14 shillings 6 pence (\$2.03) to 15 shillings (\$2.10) per protein unit in the long ton, c.i.f., British ports. On a basis of 65 percent protein, the dollar price per long ton is \$131.95 and \$136.50 or \$119.70 and \$123.83 per short ton. The United Kingdom in 1960 took roughly 50,000 short tons of South African fish meal. Indications for 1962 are that British purchases will be much higher.

The South African Fish Meal Producers' Association early in March was selling to the same British buyers at a slightly higher price, for delivery from July through December 1962: 15 shillings 6 pence (\$2.17) to 16 shillings (\$2.24) per protein

South Africa Republic (Contd.):

unit in the long ton. This equals for 65 percent protein to \$141.05 and \$145.60 per long ton or \$127.96 and \$132.09 per short ton. All prices are c.i.f. British ports.

West German buyers have agreed to take 18,000 long tons of South African fish meal; a price was agreed upon only for the first 6,000 tons and the price for the remaining 12,000 tons is being negotiated.

United States total imports of South African fish meal during 1962 will consist of 10,000 short tons sold at \$113 per short ton f.o.b. U.S. rail cars.

East Germany is now reported to be taking only 30,000-35,000 metric tons of fish meal from South Africa, compared to 50,000 tons as previously reported.

Japan is taking 5,000 metric tons during February, March, and April 1962 at a fixed price of \$124 per metric ton c.i.f. Japanese ports.

Israel is taking 13,000 metric tons for the whole year.

Chinese merchants in Singapore have bought 2,000 long tons of South African fish meal at \$145.60 a long ton c.i.f. Singapore. There is little doubt that this is intended for resale in Malaya, which officially boycotts South African goods.

South African fish meal is sold, as a policy, on the basis of 60 percent protein content guaranteed, but the Association is prepared, under some conditions, to guarantee up to 65 percent. The digestibility is guaranteed at 90 percent. Higher digestibility has been found in frequent tests.

South African fish solubles production for 1962 has all been sold, on an estimated production of 3,300 short tons. All of this was taken by West German buyers and one United States buyer at prices ranging from \$134.40 to \$145.60 per long ton c.i.f. ports. Presumably the lower price applies to the West German sales. (Prices are presumed to be for dried solubles.)

All 1962 South African fish oil has been committed to buyers at home and abroad. The domestic price is now under discussion; export prices are all presently being withheld. (Report of March 5, 1962, from the United States Consulate, Cape Town.)

Note: Values converted at rate of R1 equal US\$1.40.

FISHERIES DEVELOPMENT CORPORATION SPONSORING TUNA PURSE-SEINING EXPERIMENT:

It had been reported in September 1961 that the Fisheries Development Corporation of South Africa (Ltd.) was waiting to receive permission from the Minister of Economics to re-allocate funds to engage a tuna vessel from a large United States west coast fish cannery firm. This project has failed to materialize, owing partly to the price asked by the cannery firm and partly to some opposition to the project within the South African fishing industry.

Since that time there have been other interesting developments. A South African firm, canners of abalone and producers of milled seaweed at Hermanus, Cape Province, obtained the 60-foot pilchard vessel *Thynnus* with financial help from the Fisheries Development Corporation. They undertook to fish for tuna with the vessel, using Japanese long-line gear, for five months ending in February 1962. Some spectacular catches were made, but on the whole the experiment was a failure. Whereas it had been hoped to catch a minimum of five tons per week the results were reportedly nearer five tons per month.

The Development Corporation has now taken this same vessel under charter, but has left it in the hands of the cannery firm. The vessel was scheduled to enter a Cape Town boatyard on March 15, 1962, for alterations which will enable it to use a purse seine. This will include relocating the deck winch and strengthening or replacing the mainmast boom to support a power block. The power block and the purse seine are being imported into South Africa. The net will be imported all made up as there is not sufficient know-how available locally to make it up properly.

The configuration of the South African pilchard vessel, with its mast forward of the midships hatch and its cabin aft makes it necessary to use the power-block and purse-seine gear differently than it is used on United States tuna purse seiners. For instance, no turntable will be installed. Special consideration has also to be given to the fact that the alterations made must still allow the vessel to be used as a pilchard vessel during the South African pilchard season, January 1 to July 31. If the experiment with this first vessel is successful, it will open up an alternate use for the 136 vessels of South Africa's pilchard fleet during the remaining five months of each year when they are normally idle. Consequently the alterations to be made cannot impede the vessels primary mission which is still to catch pilchards. The *Thynnus* is a wooden-hulled boat with a service speed of 9 to 10 knots.

To promote the success of this experiment the Development Corporation has obtained the services of South Africa's top fishing skipper and winner of the 1961 Caltex "Star of the Fleet" trophy for the vessel "which in proportion to registered tonnage lands the greatest tonnage of fish during the season. His vessel landed 8,856 short tons of fish during the seven-months season. (United States Consulate, Cape Town, report of March 5, 1962.)

FISHERY TRENDS, 1961:

South Africa Republic fishery trends in 1961 were reported in the March 14, 1962, Rand Daily Mail of Cape Town. The article stated:

"Though unjustified as far as other activities of the fishing industry are concerned, anxiety about South Africa's rock (spiny) lobster may lead to further restrictions on this commodity, according to the annual report of the Fisheries Development Corporation of South Africa.

"The report mentions that there had already been a reduction in export quotas as a conservation measure as a result of decreased availability which had led to higher production costs. A further reduction will be made in the coming season with the same purpose in view.

"Taking the fishing results for the financial year ended September 30, 1961, the report says that the intake of pelagic fish for South Africa and South-West Africa combined increased from 731,239 tons in 1960 to 937,544 tons in 1961. Meal production rose from 149,060 to 201,626 short tons, and oil production from 40,113 to 58,926 long tons.

South Africa Republic (Contd.):

"Two features dominated the South Africa season, namely the return of vast shoals of pilchards to the St. Helena Bay coast and the high quality of the pilchards landed.

"One large factory drew 85 percent of its raw fish from waters north of Dassen Island as compared with 22 percent in the previous year. . . ."

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PRODUCTION OF WHALE PRODUCTS DOWN IN 1961:

Although the number of whales taken by South Africa in 1961 exceeded the number taken in 1960, the total output of whale products was lower in 1961. This resulted from an increased take of the smaller sei species and a drop in the catch of the larger fin and sperm whales.

In 1961, 2,026 whales were taken, compared with 1,964 in 1960. The total value of whale products was US\$3,800,000 in 1961 as compared with \$4,200,000 in 1960. (United States Consulate, Durban, February 6, 1962.)



South-West Africa

PILCHARD PLANTS TO OPERATE YEAR-ROUND:

A result of the incursion of the Russian fishing fleet off South-West Africa is that the Administration of the Territory has agreed that the six pilchard fishing factories at Walvis Bay may operate year-round, according to an article which appeared in the February 23, 1962, issue of *The Financial Times*.

Previously they were limited to a fixed season—usually from the end of March until the end of November. The change is a distinct advantage for the fishing industry. Factories can now regulate their fishing and landing operations as they wish, operating when they expect the fish to be in the best condition. Two factories at Walvis Bay opened in mid-February 1962; the remaining 4 preferred to wait until mid-March when they expected the fish oil content of the fish to be higher and the fish in better condition.

* * * * *

EASTERN EUROPEAN COUNTRIES TURN TO FISH MEAL AS SUBSTITUTE FOR SOYBEAN MEAL:

The Chairman of the South-West African Fishing Industry early in March 1962 stated that the famine in Communist

China has seriously reduced production and consequently exports of soybean meal to Eastern European countries with the result that those countries, especially East Germany, have turned to fish meal as a substitute to meet their requirements. (Previously, Red China shipped over 500,000 tons of soybean meal annually to Eastern European countries.) The demand for South-West African fish meal has, as a result, increased greatly in recent years to the point where in 1961 the South-West and South African producers were unable to fulfill the large number of orders from Eastern Europe. A considerable portion of those orders were passed on to Peru.

For 1962 the South African and South-West African fish meal production quotas have been increased by the International Association of Fish Meal Exporters (meeting in Lisbon) from 110,000 to 160,000 tons. All of that amount has reportedly been sold in advance.

An article in the *Financial Mail* of February 23, 1962, says that the fishing industry of South-West Africa has requested the South West Africa Administration to abolish or at least increase the pilchard catching quota for this year, so that the producers will be able to meet the outstanding orders for fish meal from Eastern European countries.

In 1960 East Germany bought nearly 53,000 metric tons of fish meal from South Africa, with a value of R388,406 (US\$544,000). In 1959 East Germany had not purchased any fish meal from South Africa. Available trade statistics suggest that the level of exports to East Germany in 1961 continued at about the 1960 level. Toward the end of last year East Germany estimated its 1962 demand for fish meal at 100,000 metric tons and wished to purchase at least 50,000 tons from South Africa. Reportedly East Germany would buy its entire requirements for 1962 from South Africa, if not restrained by the International Fish Meal Producers Association.

The South-West fishing industry undoubtedly hopes that the South West Africa Administration will act favorably on its request for an increase in the 1962 quota for pilchards, so that advantage can be taken of this (possibly temporary) increase in demand for fish meal, at least up to the limit of the new world market quota set for South Africa and South-West Africa this year. (United States Embassy, Pretoria, report of March 5, 1962.)



Surinam

SHRIMP INDUSTRY TRENDS AS OF MARCH 1962:

During the months of December 1961-February 1962, exports of frozen shrimp from Surinam (principally to the United States) rose sharply. This development may be attributed in large part to the arrival in November 1961 of a new manager to take charge of the packing plant in Paramaribo. During those three months the Paramaribo plant packed about 280,000 pounds of heads-off shrimp, compared with 150,000 pounds during August-October 1961, and an estimated 65,000 pounds during the first quarter of 1961. Since the Paramaribo plant has a legal monopoly^{1/2} on the processing and exportation of shrimp in and from Surinam, the fortunes of the Surinam shrimp industry are closely bound to the operations of that firm.

The sudden boom in Surinam's shrimp exports is due to the fact that the new plant manager was able to bring with him (and subsequently attract) a number of privately-owned and operated United States vessels to Surinam. The plant manager who formerly managed a shrimp packing plant in British Guiana, was also able to attract 10 to 15 vessels owned by United States fishing interests to transfer operations from British Guiana to Surinam. The Surinam shrimp fleet as of March 1962 totaled 30 vessels.

In addition to the vessels mentioned and 2 or 3 others owned by the principal shareholder (a New York City lawyer

Surinam (Contd.):

and investor) of the Paramaribo plant, an occasional Japanese trawler puts into Paramaribo to discharge its shrimp catch. There are, according to reports, three Japanese boats plus a mothership operating off the coast of the Guianas.

A San Pedro, Calif., marine company has shown a cautious interest in the Surinam fishery. The firm is considering the possibility of establishing a fish processing plant on the Surinam River at or near Paramaribo. A proposal has been submitted to the Government's Investment Committee with a view to establishing what, if any, tax holiday and other financial incentives the Government might be prepared to offer if the company were to build a plant and "import" or develop a fishing fleet.

For some time the San Pedro firm has had one vessel, the *Don Pedro*, operating in Surinam waters. The *Don Pedro* is a 200-ton shrimp trawler equipped with quick freezing and frozen-storage facilities. The shrimp are frozen and packed at sea and simply transhipped at Paramaribo. This mode of operation presumably does not violate the Paramaribo plant's exclusive franchise, since the shrimp never "enter" Surinam.

A brief article in one of the local Paramaribo papers reported in March 1962 that two United States firms are in the process of building shrimp processing plants in French Guiana—one at St. Laurent du Maroni and the other at Cayenne. Approximately 15 trawlers will be attached to each plant, and both enterprises apparently intend to export to the United States via Surinam. The St. Laurent freezing plant is expected to commence operations in June and the Cayenne factory is scheduled for completion in September. (United States Consulate, Paramaribo, report of March 15, 1962.)

The Paramaribo firm's agreement with the Surinam Government, originally concluded in 1955 and subsequently amended, provides the firm with a "limited exclusive franchise" on the exportation of shrimp. Under this agreement the Government has bound itself not to license the export of more than 85,000 pounds of shrimp annually by third parties.



Sweden

IMPORT FEES REDUCED ON FROZEN FISH FILLETS FROM EFTA COUNTRIES:

The Swedish Agricultural Marketing Board announced late in February 1962 that import fees on frozen fish fillets of cod, haddock, saithe, whiting, and redfish or ocean perch imported from European Free Trade Association (EFTA) countries, including Finland, were to be further decreased effective March 1, 1962, and will amount to 0.27 crowns per kilo (2.4 U. S. cents a pound).

The first gradual reduction of the import fee on frozen fish fillets was made on July 1, 1960, when the fee was reduced from 0.45 crowns per kilo (3.9 cents a pound) to 0.36 crowns per kilo (3.2 cents a pound).

For frozen fish fillets of the same species listed but imported from other than EFTA countries, as well as for fresh and chilled fillets from EFTA and other countries, the import fee remains unchanged, or 0.45 crowns per kilo (3.9 cents a pound). Reported on March 2, 1962, by the United States Consulate, Goteborg.



Tahiti

TUNA BASE PLANNED:

A large southern California tuna-canning firm, which is planning on establishing a tuna base in the South Pacific Ocean, is reported to have concluded an agreement with a Japanese trading company whereby the latter firm would arrange to supply raw tuna to the base. The Japanese firm reportedly has submitted a petition to the Japanese Fisheries Agency seeking approval of this undertaking, according to a translation from the Japanese periodical *Suisan Tsushin* of March 15, 1962. The gist of the plan is:

1. A joint United States-French fishing company would be established at Papeete, French Tahiti, in the South Pacific Ocean, with a capital of US\$2 million. The United States firm would contribute 80 percent of the total investment and the French firm 20 percent.

2. The joint company will construct a \$650,000 cold-storage plant (50-ton capacity freezer, 1,100-ton capacity cold-storage plant, and an ice plant with a production capacity of 15 tons of ice per day) in the City of Papeete.

3. The Japanese firm will arrange to supply tuna to the base for freezing and subsequent shipment to the United States firm's packing plant in the United States.

The Japanese company hopes to contract for over 10 Japanese tuna vessels of less than 100 tons gross to fish for the Papeete base and is said to have already signed up more than half of the vessels. Reportedly, establishment of the joint United States-French fishing company has already been approved by the Tahitian Government. Plans call for utilizing the base as a fueling station for other large Japanese tuna vessels operating in nearby waters as well.



Taiwan

TWO LARGE TUNA VESSELS BUILT IN JAPAN FOR TAIWAN:

The two 500-ton-class tuna long-line vessels ordered from a shipbuilding company at Shimizu, Shizuoka Prefecture, Japan, by a fisheries company of Formosa, had been completed as of mid-March 1962 and were expected

Taiwan (Contd.):

to be delivered to the Formosan company. According to a November 1961 press report, the two vessels are to be based at the north Formosan port of Keelung and the Chinese fishing firm plans to send them to the Indian Ocean to fish for tuna. (Shin Suisan Shimbun Sokuho, March 15, 1962, and other sources.)



U.S.S.R.

FISHING ON GEORGES BANK
IN THE NORTH ATLANTIC:

By the middle of February 1962, Soviet fishing vessels on Georges Bank in the North Atlantic numbered 10 factoryships of the 2,450-gross-ton Pushkin class and 4 factory-



Russian drifter trawler operating on "Northern Edge" of Georges Bank in October 1961. Gill nets are being hauled in. Large floats attached to float line of nets visible on surface in foreground.

ships of the 2,890-ton Leskov class, as well as 2 small trawlers. Observers report sizable hauls, primarily of herring. If last year's pattern of arrivals is followed, over 30 large factoryships were expected to be fishing on Georges Bank in March. (Unpublished sources.)

FISHING ACTIVITIES IN
THE BERING SEA:

During February 1962 the Soviet herring fleet, led by the fish-locating flagship Braslav and two other large freezer stern-trawlers (Ulianovsk and Arseniev), was operating mainly in the vicinity of the Pribilof Islands. Approximately 100 medium trawlers were hauling their catches to refrigerated fish transports. They also deliver catches to stern-trawlers, because there are not enough refrigerated transports on hand.

Another fleet began fishing for flounder north of Unimak Island on February 14. Approximately 40 trawlers were led by the reconnaissance vessel Pelamida. (Unpublished sources.)

THIRD FACTORYSHIP FOR
FAR EAST FISHING FLEET:

Pavel Chebotniagin, the third of a new series of factoryships with crab canning equipment, was launched at the Leningrad Admiralty Shipyards. Like the Eugenii Nikishin and Andrei Zakharov, it is assigned to the Soviet Far East Fishing Fleet. The 15,000-gross-ton vessel was expected in Vladivostok at the end of March 1962. (Unpublished sources.)

The December 6, 1961, issue of Ekonomitsjeskaja carried an article on the factoryship Andrei Sakharov which was delivered from the Leningrad shipyard about a year earlier and also operates from Vladivostok. The vessel is first and foremost equipped for catching and processing crab and "Pacific mackerel" (Cololabis saira), but can also fish for salmon and pollock.

"Pacific mackerel" are fished for at night with the aid of blue electric lights which attract the fish. The lights are fastened several meters from the vessel's side. When the lights have attracted a sufficient number of fish, they are changed to red. The fish are blinded and are easily taken in nets. (According to earlier information it was planned to catch about two million hectoliters or 186,000 metric tons of fish with the aid of electric lights in all of the U. S. S. R.)

Note: Also see Commercial Fisheries Review, April 1962 p. 64.

BUILDING LARGE TUNA VESSEL:

A new 930-ton tuna vessel being built in Leningrad will be 177 feet long with a maximum speed of 12 knots and a cruising range of 60 days. The net, managed by two winches, will be the main fishing gear used, although particularly large tuna will be killed with electric gear.

Upon completion the vessel will be assigned to the Soviet Pacific fishing fleet operated by the Main Administration of Far Eastern Fisheries, which plans to develop a significant tuna fishery in the Pacific and Indian Oceans. (Unpublished sources.)

U. S. S. R. (Contd.):

FISHERY CATCH FOR 1961:

The Soviet Union's fisheries fulfilled the 1961 plan with a catch of about 3.7 million metric tons of fish, whales, and other aquatic products. The 1962 plan calls for a total catch of 3,937,000 tons. The catch in 1960 was 3.5 million tons (the catch of 3.1 million tons reported previously did not include whales). Marine fisheries now account for

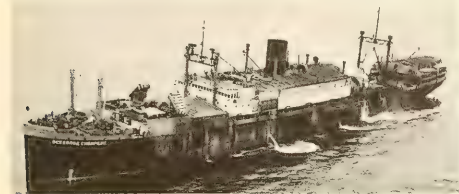


Fig. 1 - A large Russian fishery factoryship.

about four-fifths (78 percent) of the U. S. S. R. catch, whereas only a decade ago inland fisheries accounted for over one-half (54 percent) of the catch.



Fig. 2 - Russian trawler operating in North Pacific. Length about 70 feet.

Soviet fishing in the Northwestern Atlantic began in 1957, and in the short span of four years catches rose to 258,000 metric tons in 1960. Fishing expansion into the North Pacific began in 1958, and catches in that area grew from 480,000 tons in 1950 to 860,000 tons in 1960. In 1959, the expansion of Soviet fishing into the Central and South Atlantic began. Antarctic whaling has also been intensified. The principal expansion areas during the Seven-Year Plan will be in the Northwest Atlantic, South Atlantic, Bering Sea, and Indian Ocean. (Translations from various monthly issues of Rybnoe Khoziaistvo.)

Note: Also see Commercial Fisheries Review, April 1962 p. 55.

WHALING FLEET IN ANTARCTIC INCREASING:

Soviet participation in Antarctic whaling has increased while Norwegian and British participation has declined. A total of 67 Soviet whale catcher boats and 4 floating factories participated in the 1961/62 Antarctic whaling season. The Soviets operate 37 catchers and 2 floating factories in Antarctic waters in 1959/60, and 52 catchers and 3 floating factories in 1960/61. Out of the 18 new catchers built in 1961 by Antarctic whaling nations, 15 were Soviet. (Norsk Hvalfangst-Tidende, No 1, January 1962.)

RUSSIANS APPREHEND DANISH FISHING VESSELS WITHIN TWELVE-MILE LIMIT:

In February 1962 at least two Danish salmon fishing cutters were apprehended by Russian authorities in the Baltic Sea, according to Copenhagen newspaper reports. The vessels were taken into port, fined for fishing within the 12-mile limit established by the U. S. S. R., and then released.

Baltic salmon are sought by fishermen from Poland, Sweden, Finland, and West Germany, as well as from Denmark. The Danes are reported to have the best boats and gear and to fish most intensively. The Danish catch of salmon in 1961 (practically all from the Eastern Baltic) amounted to 2.6 million pounds as compared with the record catch of 3.1 million pounds in 1960. Ex-vessel prices averaged 13.33 kroner per kg. (87.7 U. S. cents a pound) in 1961, 8.3 percent under the record price of 14.54 kroner per kg. (95.6 cents a pound) in 1960. (Fisheries Attache, United States Embassy, Copenhagen, February 26, 1962.)



United Kingdom

NEW REFRIGERATED VAN WITH AUTOMATIC DEFOST:

A British firm has introduced eighty 30-cwt. (1-1½-ton) vans equipped with forced-air evaporators, and reverse-cycle defrost system providing an operative temperature of -5° to -10° F. (-20.6° to 23.3° C.). The payload in the vans compares favorably with heavier vans up to 3 tons, using other types of cooling coils which take up considerable space and impose an uneconomic weight load.

United Kingdom (Contd.):

The defrost periods are determined by a timer at 4-hourly periods which initiates the defrost on the time cycle and terminates an evaporator temperature, a feature which eliminates unnecessary defrosting time. The power unit assembly is arranged to avoid taking up "payload" space with the compressor, engine, electric motor (for depot operation), and A. C. generator (to energize evaporator and condenser, fans, reversing valve, and timer) mounted on the off-side, underslung between wheels, while the air-cooled condenser and fan are mounted again underslung on the nearside.

The reverse cycle defrost system has been under test by the British firm throughout 1960 on a prototype vehicle and has successfully demonstrated that effective defrosting can be assured without temperature rise of stored products and enabling the vehicle to be in constant service, eliminating the weekly "day-off" for defrosting other types of cooling coils. (Modern Refrigeration, vol. 64, 1961, no. 758, p. 485.)

* * * * *

BRITAIN'S 1962 IMPORT QUOTAS
FOR SOVIET CANNED FISH:

According to a report in the British Board of Trade Journal (March 16, 1962), the United Kingdom recently concluded negotiations with the Soviet Trade Delegation on quotas for Soviet goods to be imported into the United Kingdom for calendar year 1962. Among the consumer goods for import into the United Kingdom from the Soviet Union in 1962 were the following fishery products:

	Value, c.i.f.
Canned salmon	£550,000
Canned crab meat	450,000
Caviar (including red caviar) .	60,000

Among the British consumer goods for export to the Soviet Union were:

	Value, c.i.f.
Salted herring	£160,000
White fish	350,000

The Board of Trade also gave notice that their Tariff and Import Policy Division was considering an application for removal of the import duty on fats and oil of fish and marine mammals, but not including sperm oil.



SOUNDS OF FRESH-WATER DRUM

Because only sexually mature fresh-water drum produce sounds, fishery researchers Hans Schneider and Arthur D. Hasler (University of Wisconsin) conclude that the function is one of communication during spawning. Their findings, based on hydrophone recordings in Lake Winnebago, Wis., plus detailed study of the sound-producing apparatus in 13 species, are reported in Zeitschrift fur vergleichende Physiologie 44 (1960).

Schneider and Hasler determined that drumming started in early May, reached the maximum in June, then decreased gradually until the end of August. During the spawning season in June, the first sounds were heard at about 10 a.m. daily, increased to highest activity in the afternoon, then decreased until drumming ceased at sunset. This rhythm was altered by changes in weather conditions.



FEDERAL ACTIONS



Department of the Interior

FISH AND WILDLIFE SERVICE

BUREAU OF COMMERCIAL FISHERIES

FEDERAL STANDARDS FOR GRADES FOR FROZEN FLOUNDER AND SOLE FILLETS:

Voluntary standards for grades for frozen flounder and sole fillets have been promulgated by the U. S. Department of the Interior. The standards were published in the March 21, 1962, Federal Register. They will become effective on April 20, 1962.

The standards were developed by the Bureau of Commercial Fisheries, Fish and Wildlife Service, in cooperation with the industry and the National Fisheries Institute, an industry trade association. Public hearings on the proposed standards were held in 1961 at Seattle, Wash., San Francisco, Calif., and Boston, Mass. As a result of research and discussions, the proposed standards were prepared and published in the Federal Register of January 5, 1962. No adverse criticism was received during the 30-day period provided for comment.

The standards include flounder or sole fillets frozen in solid blocks, with or without separators between fillets,

and fillets individually quick-frozen. The U. S. Grade A is the highest quality product; U. S. Grade B is acceptable in all respects. Frozen flounder or sole fillets which do not meet the A or B grades are considered substandard.

Firms processing the fish in accordance with the standards and under the continuous inspection of the Government have the privilege of displaying the Department of the Interior "shield of quality" upon the product.

This is the twelfth voluntary standard of quality promulgated by the Department. Standards already have been established for frozen fish blocks, frozen fried fish sticks, frozen raw breaded fish portions, frozen cod fillets, frozen haddock fillets, frozen ocean perch fillets, frozen halibut steaks, frozen salmon steaks, frozen raw breaded shrimp, frozen raw headless shrimp, and frozen fried scallops.

The Department also conducts a continuous inspection service for those who wish it. Forty processors annually producing approximately 160 million pounds of fishery products participate. The Department also offers a "lot" inspection program. Under this program, a certificate showing the grade of the product may be issued, but the Department's "shield" may not be displayed on individual packages. All costs of product-certification services are borne by the industry.

The standards as published in the Federal Register of March 21, 1962, follow:

Title 50—WILDLIFE AND FISHERIES

Chapter II—Bureau of Commercial Fisheries, Fish and Wildlife Service, Department of the Interior

SUBCHAPTER C—PROCESSED FISHERY PRODUCTS, PROCESSED PRODUCTS, THEREOF, AND CERTAIN OTHER PROCESSED FOOD PRODUCTS

PART 274—UNITED STATES STANDARDS FOR GRADES OF FROZEN FLOUNDER AND SOLE FILLETS¹

On page 107 of the FEDERAL REGISTER of January 5, 1962, there was published a notice and text of a proposed new part 274 of Title 50, Code of Federal Regulations. The purpose of the new part is to issue United States Standards for Grades of Frozen Flounder and Sole Fillets under the authority transferred to the Department of the Interior by section 6(a) of the Fish and Wildlife Act of August 8, 1956 (16 U.S.C. 742e).

Interested persons were given until February 5, 1962, to submit written comments, suggestions or objections with respect to the proposed new part. No objections were received and the proposed new part is hereby adopted without change and is set forth below. This

¹ Compliance with the provisions of this standard shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act.

part shall become effective at the beginning of the 30th calendar day following the date of this publication in the FEDERAL REGISTER.

Dated: March 14, 1962.

STEWART L. UDALL,
Secretary of the Interior.

Sec.	Description of the product.
274.1	Styles of frozen flounder and sole fillets.
274.3	Grades of frozen flounder and sole fillets.
274.11	Determination of the grade.
274.21	Definitions.
274.25	Tolerances for certification of officially drawn samples.

AUTHORITY: §§ 274.1 to 274.25 issued under sec. 6(a) of the Fish and Wildlife Act of Aug. 8, 1956; 16 U.S.C. 742e.

§ 274.1 Description of the product.

Frozen flounder and sole fillets consist of clean, wholesome fillets processed and frozen in accordance with good commercial practice and maintained at temperatures necessary for their preservation. The fillets may be cut transversely or longitudinally into subunits.

NOTE: This standard does not provide for the grading of units of fish flesh cut from previously frozen fish blocks, slabs, or similar material.

The product covered by this standard is prepared from the following species only:
SOLE

Dover sole (*Microstomus pacificus*)
English sole (*Parophrys vetulus*)

Gray sole (*Glyptocephalus cynoglossus*)
Petrale sole (*Eopsetta jordanii*)
Lemon sole (*Pseudopleuronectes americanus*, over 3½ pounds)
Rock sole (*Lepidopsetta bilineata*)
Sand sole (*Psettichthys melanostrictus*)

FLOUNDER

Blackback (*Pseudopleuronectes americanus*, less than 3½ pounds)
Yellowtail flounder (*Limanda ferruginea*)
Dab plaice (*Hippoglossoides platessoides*)
Fluke (*Paralichthys dentatus*)
Starry flounder (*Platichthys stellatus*)

§ 274.2 Styles of frozen flounder and sole fillets.

(a) *Style I—Solid pack.* Fillets are frozen together. Individual fillets can be separated only by thawing the entire package or part of the package, depending on absence or presence of separators.

(1) *Substyle A.* Fillets are packed into a single solid block.

(2) *Substyle B.* Fillets are subpacked with separators into smaller weight units.

(b) *Style II—Individually-quick-frozen pack (IQF).* Fillets are individually quick frozen. Individual fillets can be separated without thawing.

§ 274.3 Grades of frozen flounder and sole fillets.

(a) "U.S. Grade A" is the quality of frozen flounder or sole fillets for which the total score is not less than 85 points, when the fillets are rated in accordance

with the scoring system outlined in the following sections.

(b) "U.S. Grade B" is the quality of frozen flounder or sole filets for which the total score is less than 85 points but is not less than 70 points, when the filets are rated in accordance with the scoring system outlined in the following sections.

(c) "Substandard" is the quality of frozen flounder or sole filets that fail to meet the requirements of the U.S. Grade B.

§ 274.11 Determination of the grade.

The grade is determined by observing the product in the frozen, thawed, and cooked states and is evaluated by numerical scoring. Points are deducted for variations of quality for each factor in accordance with the schedule in table 1. The total of the points deducted is subtracted from 100 to obtain the score. The maximum score is 100; the minimum score is 0.

TABLE 1—SCHEDULE OF POINT DEDUCTIONS PER POUND OF FLOUNDER OR SOLE FILETS AND GRADING SCORE SHEET

	Scored factors	Description of quality variation	Deduct	Deductions
Frozen	1. Appearance.....	Adversely affected by imbedded packaging material, voids, depressions, surface irregularity, and poor arrangements of filets:	Slight..... Moderate..... Excessive.....	2..... 4..... 10.....
	2. Desupuration....	For each inch square (determined by grid) of affected area:	Color masking, easily scraped off..... Deep, not easily scraped off.....	1/2..... 1.....
	3. Weights.....	(a) For each filet or piece less than 1 oz., except first filet or piece. (b) For sole only: For each filet from 1-2 oz., except first filet. For flounder only: For each filet from 1-2 oz., except first three filets.	5..... 2..... 2.....	..... ..... .....
Thawed	4. Workmanship defects.	For each inch square (determined by grid) of affected area:	(a) Cutting and trimming (ragged edges, holes, tears, improper or unnecessary cuts and lacerations). (b) Disinfectants (only lining, blood spots, bruises, extraneous material, fins, discolored pugh marks, scales and skin). (c) Bones (bones normally removed).....	3/2..... 2..... 3.....
	5. Color.....	(a) Deteriorative discoloration (yellowing of fatty portions and/or darkening of light portions). (b) Non-uniformity of color (natural color differences within package due to packing fish of contrasting color).	Slight..... Moderate..... Excessive.....	2..... 15..... 5.....
	6. Abnormal condition.	Usability and/or desirability of filets impaired by abnormal conditions (jellied, milky, chalky).	Moderate..... Excessive.....	16..... 31.....
Cooked	7. Texture.....	Tough, dry, fibrous, or watery for species involved.	Slight..... Moderate..... Excessive.....	4..... 8..... 15.....
	8. Odor and flavor.	Very good: Full typical odor and flavor of fresh fish. Good: Noticeable decrease in typical odor and flavor of fresh fish. Reasonably good: Lacking typical odor and flavor of fresh fish, but not objectionable. Substandard: Objectionable odor and/or flavor.....	..... ..... ..... .....	..... ..... ..... 31.....
Total deductions.....				
Score (100 minus total deductions).....				
Grade (100 to 85=Grade A; 84 to 70=Grade B; 69 and below=Substandard).....				
Label.....				
Size of lot.....				
Size of sample.....				
Number of packages per master carton.....				
Remarks.....				
Actual net weight.....lb.....oz.....				
Size and kind of container.....				
Container mark or identification.....				
Type of overwrap.....				

§ 274.21 Definitions.

(a) "Slight" refers to a condition that is scarcely noticeable but that does affect the appearance, desirability, and/or eating quality of the filets.

(b) "Moderate" refers to a condition that is conspicuously noticeable but that does not seriously affect the appearance, desirability, and/or eating quality of the filets.

(c) "Excessive" refers to a condition that is conspicuously noticeable and that does seriously affect the appearance, desirability, and/or eating quality of the filets.

(d) "Bones normally removed" refers to (1) nape membrane bones (adjacent to visceral cavity) and to (2) radial bones (adjacent to fins and lace area).

(e) "Determined by grid" means that a transparent grid of 1-inch squares is placed over the defect area, and points are deducted (as specified in table 1) for each square of affected area under the grid, each square being counted as one whether it is full or fractional.

(f) "Thawed state" means that the frozen product has been placed within a film-type pouch and warmed to an internal temperature of about 32° F by immersing the pouch in running tap water of about 50° to 70° F. Thawing time usually takes 25 to 45 minutes for a 1-pound package.

(g) "Cooked state" means that the thawed, unseasoned product has been placed within a boilable film-type pouch and heated to an internal temperature of about 160° F by immersing the pouch

in boiling water. Cooking time usually ranges from 3 to 5 minutes for single filets and from 7 to 10 minutes for 1-pound packages of filets.

(h) "Actual net weight" means the weight of the fish flesh within the package after all packaging material, ice glaze, or other protective coating have been removed. ("Actual net weight" of frozen glazed filets is determined as follows: (1) Rapidly remove excessive ice layers or pockets with running tap water or nozzle-type water spray. (2) Rapidly thaw remaining surfaces of frozen fish sufficiently with tap water or spray to prevent refreezing free surface water. (3) Gently wipe off all free water with a moisture-saturated paper towel. (4) Weigh the fish to obtain "actual net weight".)

(i) "Abnormal condition" means that the normal physical and/or chemical structure of the fish flesh has been sufficiently altered so that the usability and/or desirability of the filet is adversely affected. It includes, but is not limited to, the following examples:

(1) "Jellied" refers to the abnormal condition wherein a filet is partly or wholly characterized by a gelatinous, glossy, translucent appearance, feels slimy to the touch, and retains its gelatinous, slimy properties in the cooked state.

(2) "Milky" refers to the abnormal condition wherein a filet is partly or wholly characterized by a milky-white, excessively mushy, pasty, or fluidized appearance.

(3) "Chalky" refers to the abnormal condition wherein a filet is partly or wholly characterized by a dry, chalky, granular appearance and fiberless structure.

(j) "Odor and flavor" is classified as follows:

(1) "Very good": Fish in this category have essentially the full, good typical odor and flavor of the indicated species.

(2) "Good": Fish in this category show a noticeable decrease of the good, typical odor and flavor of the indicated species, and/or may have certain less acceptable natural environmental odors and flavors of slight intensity (odoriform-type, phenolic-type, feed-type, etc.), but may have no off odors and flavors.

(3) "Reasonably good": Fish in this category may be flat, or completely lacking in the good typical odor and flavor of the indicated species, and/or may have certain less acceptable natural environmental odors and flavors of moderate intensity (odoriform-type, phenolic-type, feed-type, etc.) but may have no objectionable odors and flavors.

(4) "Substandard": Fish in this category have odors and flavors that are objectionable.

LOT CERTIFICATION TOLERANCES

§ 274.25 Tolerances for certification of officially drawn samples.

The sample rate and grades of specific lots shall be certified in accordance with Part 260 of this chapter (Regulations Governing Processed Fishery Products, Vol. 25 F.R. 8427 Sept. 1, 1960).



Department of State

INTERNATIONAL COOPERATION ADMINISTRATION

FISHERIES GRANTS TO FOREIGN COUNTRIES:

A list of financial grants by the International Cooperation Administration in fiscal year 1961 to aid and rehabilitate the fisheries of a number of foreign countries appeared in the March 13, 1962, Congressional Record. Senator Gruening presented the list in the Senate for publication. The fishery projects financed for fiscal year 1961 follow:

Agriculture and Natural Resources, Fiscal Year 1961	
Area, Country, and Project	Amount
Far East:	
Cambodia: Fisheries conservation	\$ 24,000
Republic of China: Fisheries development	21,000
Indonesia: Expansion and modernization of marine and inland fisheries	70,000
Korea: Fisheries development (typhoon rehabilitation)	131,000
Near East and south Asia:	
India: Expansion and modernization of marine and inland fisheries	40,000
Pakistan: Fisheries development	15,000
Africa:	
Liberia: Fresh-water fisheries	30,000
Somali Republic: Fisheries improvement	30,000
Tunisia: Aid to commercial fisheries	27,000
Latin America:	
Overseas territories: shrimp and fisheries	19,000
Europe:	
Yugoslavia: Fisheries	76,000
Total	\$483,000

Note: Also see *Commercial Fisheries Review*, April 1961 p. 92.



Department of the Treasury

COAST GUARD

CERTAIN FISHING VESSEL DATA IN COAST GUARD FILES SHOULD BE KEPT UP-TO-DATE:

The U. S. Coast Guard advises that there is certain information concerning fishing vessels which should be kept current in the Coast Guard files. In particular, it is suggested that if a vessel owner changes the color scheme of his vessel or vessels, he should notify the Coast Guard of such change for the following reason: Coast Guard procedure for locating and assisting a fishing vessel in distress, particularly when airplanes or helicopters are used, is to first acquaint the crew of the rescue craft with a description of the distressed vessel, taken from their files. Thus, if such vessel is on file as being painted white and trimmed in

black, and the owner has changed this color scheme without notifying the Coast Guard, the aircraft may pass by the stricken vessel and continue its search for one that fits the description on file.

A further suggestion to promote quick recognition of a vessel from the air is to have its name painted on top of the wheelhouse in large letters. The latter can be quite helpful to aircraft rescue crews in making a quick recognition of a distressed vessel, particularly in severe weather.

BUREAU OF CUSTOMS

IMPORTS OF CANNED-IN-BRINE TUNA UNDER QUOTA PROVISIO FOR 1962:

The quantity of tuna canned in brine which may be imported into the United States during calendar year 1962 at the 12½ percent rate of duty is limited to 59,059,014 pounds (or about 2,812,000 standard cases of 48 7-oz. cans). This is 3.4 percent more than the 57,114,714 pounds (about 2,720,000 standard cases) in 1961, 10.5 percent more than the 53,448,330 pounds in 1960, 12.8 percent more than the 52,372,574 pounds in 1959, 32.1 percent more than the 44,693,874 pounds in 1958, and 29.9 percent more than the 45,460,000-pound quota for 1957. Any imports in excess of the quota will be dutiable at 25 percent ad valorem.

Any tuna classifiable under Tariff Act paragraph 718(b)--fish, prepared or preserved in any manner, when packed in airtight containers. . . (except fish packed in oil or in oil and other substances; . .)--which is entered or withdrawn for consumption is included.

A proclamation (No. 3128), issued by the President on March 16, 1956, gave effect to an exchange of notes with the Government of Iceland to withdraw tuna canned in brine from the 1943 trade agreement and invoked the right to increase the duty reserved by the United States in negotiations with Japan and other countries under the General Agreement on Tariffs and Trade. The quota is based on 20 percent of the previous year's United States pack of canned tuna.

The 1962 tariff-rate quota was published in the April 10, 1962, *Federal Register* by the Bureau of Customs of the U. S. Department of the Treasury.

Note: (1) Pounds converted to cases at 21 pounds equal 1 standard case of 48 7-oz. cans.

(2) Also see *Commercial Fisheries Review*, February 1962 p. 45.



United States District Court

FISHERMEN ARE INDEPENDENT CONTRACTORS FOR TAX PURPOSES:

Captains and crewmen working on shares on shrimp vessels are not employees for tax purposes, but are independent contractors. This was the gist of a ruling by Federal Judge David W. Dyer of the United States District Court in Miami, Fla., in March 1962. The decision handed down was specifically that captains and crewmen working on shares on Charles Ludwig's shrimp vessels out of Tampa, Fla., were not his employees for tax purposes, but were independent contractors. The Government insisted upon having a jury decide whether Charles Ludwig was entitled to a refund of taxes he paid by mistake over the years. However, Judge Dyer ruled that there was nothing for the jury to decide. Evidently this means that fishermen are not employees when it comes to paying employment taxes.

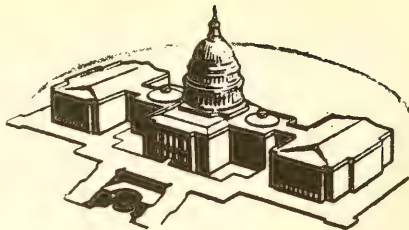
This decision was the same as the one in the Crawford Packing Company case. In that case the United States District Court for the Southern District of Texas in a trial at Galveston, Tex., on January 23, 1962, decided that shrimp fishermen, working on a lay or share basis, are not employees of the boat owners but are independent contractors for Federal employment tax and income withholding tax purposes. The Crawford Packing Company of Palacios, Tex., in a civil suit against the United States of America contended that the fishermen were free from detailed control of their fishing activities by the Crawford Packing Co. Judge James Noel, after a two-day hearing, ruled that the Government did not overcome Crawford's clear showing that the fishermen were free from direction and control of their fishing activities and that their earnings were dependent solely upon their skill, initiative, weather, and good fortune.

Note: See Commercial Fisheries Review, Sept. 1961 p. 114.



Eighty-Seventh Congress (Second Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon.



Introduction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.

FISHERY MARKETING ACT AMENDMENT: S. 3093 (Magnuson and Bartlett) introduced in the Senate on April 2, 1962, to make clear that fishermen's organizations, regardless of their technical legal status, have a voice in the ex-vessel sale of fish or other aquatic products on which the livelihood of their members depend; referred to the Committee on Commerce. This bill would amend the Fisheries Marketing Act of 1934, an act originally designed to provide fishermen as primary producers with the right of self-association for cooperative improvement of their conditions. The amendment seeks to bring the Marketing Act up to date by relating it to the practical problems that presently cloud the rights of fishermen to associate themselves together, whether in unions or cooperatives, and collectively bargain for a fair return on the fish harvested. Would extend bargaining privileges to organizations composed of both employee fishermen and those who own or have an interest in the boats or gear with which they fish. H. R. 11159 introduced in House, April 9, 1962, similar to S. 3093; referred to the Committee on Merchant Marine and Fisheries.

FISHING VESSEL DISASTER LOANS: H. R. 10827 (Johnson) introduced in the House on Mar. 20, 1962, to provide disaster loans to fishing vessel owners and operators and other boat owners and operators engaged in the seafood industry adversely affected by failure of the seafood resource, and for other purposes; referred to the Committee on Merchant Marine and Fisheries. Similar to other bills previously introduced in the House.

GAME AND FOOD FISH CONSERVATION IN DAM RESERVOIRS: H. R. 11275 (Miller) was introduced in the House on April 12, 1962, to authorize the Secretary of the Interior to provide financial assistance to States in research programs to improve the conservation of fish in reservoirs; referred to the Committee on Merchant Marine and Fisheries. Similar to other bills previously introduced.

HEALTH, EDUCATION AND WELFARE APPROPRIATIONS FY 1963: Departments of Labor and Health, Education, and Welfare Appropriations for 1963 (Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives, Eighty-Seventh Congress, Second Session, on Department of Health, Education and Welfare, Part II). It includes funds for the Food and Drug Administration and the training program in the fishery trades and industry.

The House on Mar. 27, 1962, by a voice vote passed H. R. 10904, making appropriations for the Departments of Labor and Health, Education, and Welfare and related agencies for the fiscal year 1963. Included are funds for the training program in the fishery trades and industry, the Food and Drug Administration, and appropriations for the water pollution program. The latter program provides for regional laboratories located in strategic points throughout the country to promote research and training activities and provide a base of action for State, interstate and Federal agencies cooperating to eliminate water pollution. In addition to the laboratories, the Committee's report to the House pointed out the need for two specialized facilities to deal with the problems of aquatic life in fresh and marine waters. The two facilities would (1) establish water quality criteria for protecting fish and other aquatic life and (2) establish criteria for a healthy physical and chemical water environment that will permit the propagation and growth of aquatic life as well as bare survival.

INDIAN FISHING RIGHTS: H. J. Res. 698 (Pelly) was introduced in the House on Apr. 17, 1962, a joint resolution regarding Indian fishing rights. Proposes to solve the problem of treaty or nontreaty Indians fishing off the reservation in violation of the State regulations; referred to the Committee on Interior and Insular Affairs.

INTERIOR APPROPRIATIONS FY 1963: On Mar. 21, 1962, the Senate received the House-passed bill H. R. 10802, an act making appropriations for the Department of the Interior and related agencies for the fiscal year ending June 30, 1963. Referred to the Committee on Appropriations. Included in the budget are estimates for the U. S. Fish and Wildlife Service and its two Bureaus--Commercial Fisheries and Sport Fisheries and Wildlife.

MEDICAL CARE FOR VESSEL PERSONNEL: H. R. 10921 (Pelly) introduced in the House on Mar. 26, 1962, to provide medical care for certain persons engaged on board a vessel in the care, preservation, or navigation of such vessel; referred to the Committee on Interstate and Foreign Commerce. Similar to S. 367 introduced in the Senate on Jan. 11, 1961.

NORTH PACIFIC FISHERIES PROBLEMS: Northwest Salmon Fisheries Resources (Joint Hearings before the Senate Committee on Commerce and the House Merchant Marine and Fisheries Committee, Eighty-Seventh Congress, 1st Session), 127 pp., printed. Reports on a hearing held on October 13, 1961, at Tacoma, Washington. Testimony was given by Washington State personnel, fishermen, unions, and spokesmen for the Indians.

OYSTER BROOD STOCK PURCHASES: House Report No. 1449, Promoting the Production of Oysters by Propagation of Disease-Resistant Strains (Report from the House Committee on Merchant Marine and Fisheries to accompany H. R. 7336), 4 pp., printed. Committee reported the bill favorably with amendments and recommended passage. Contains the purpose of the bill, background of the legislation, cost of the legislation, changes in existing law and departmental reports. The amendments are as follows: As amended, the Secretary of the Interior is authorized with respect to those States where he finds that excessive mortality of oysters presents an immediate and substantial threat to the economic stability of the oyster industry in such

area or region, to acquire oyster brood stock that he believes possesses resistance to the causative agency of such excessive mortality. The purchase of oyster brood stock by the Secretary shall be conditional upon the participating State or States paying one-third of the cost. The amended title of the bill shall be "A bill to promote the production of oysters by propagation of disease-resistant strains, and for other purposes."

On April 3, 1962, the House passed with amendment H. R. 7336. The bill was received by the Senate on April 4, 1962, and was referred to the Committee on Commerce.

OYSTER PLANTERS DISASTER LOANS: The House Committee on Agriculture met on Mar. 22, 1962, in executive session and ordered favorably reported to the House H. R. 946 (amended), to extend to oyster planters the benefits of the provisions of the present law which provide for production disaster loans for farmers and stockmen. The House on Mar. 26, 1962, received the Committee's favorable report (H. Report No. 1502) on H. R. 946; referred to the Committee of the Whole House on the State of the Union.

H. Rept. No. 1502, Emergency Loans to Oyster Planters (Report from the Committee on Agriculture, House of Representatives, 87th Congress, 2nd Session, to accompany H. R. 946), 4 pp., printed. Committee reported the bill favorably and recommended passage with amendments. Contains the purpose of the bill, need for the legislation, cost, committee amendment, departmental recommendations, and changes in existing law. The bill would amend the emergency loan provisions of the Consolidated Farmers Home Administration Act of 1961 to make it clear that oyster planters are included among the eligible recipients of such loans.

On April 3, 1962, the House passed with amendment H. R. 946. The bill was received by the Senate on April 4, 1962, and was referred to the Committee on Agriculture and Forestry.

PRICE-QUALITY STABILIZATION: H. R. 10862 (Glenn) introduced in the House on Mar. 21, 1962, to amend the Federal Trade Commission Act, to promote quality and price stabilization, to define and restrain certain unfair methods of distribution and to confirm, define, and equalize the rights of producers and resellers in the distribution of goods identified by distinguishing brands, names, or trademarks, and for other purposes. Also introduced in the House on Mar. 29, 1962, H. J. Res. 679 (Glenn), and H. R. 11227 (Dent) Apr. 11, 1962, all referred to the Committee on Interstate and Foreign Commerce. Similar to other bills previously introduced in the House and Senate.

Senate Committee on Commerce on April 9, 1962, held hearings on S. J. Res. 159. Testimony was heard from various members of the Senate and industry personnel. The Committee resumed hearings on Apr. 19, 1962.

SAFETY OF LIFE AT SEA CONVENTION: The Senate Committee on Foreign Relations met in executive session on Mar. 28, 1962, and ordered favorably reported the International Convention for the Safety of Life at Sea, dated at London on June 17, 1960.

The Senate on April 12, 1962, adopted resolution of ratification concerning the International Convention of

the Safety of Life at Sea (Ex. K, 87th Cong., 1st Session). Ex. K was transmitted by the President to the Senate on April 27, 1961, together with the report of the Secretary of State, a copy of the final act of the Convention held at London from May 17 to June 17, 1960, and a copy of the report of the delegation of the United States to that Conference. The Convention, open for signature from June 17 to July 17, 1960, was signed by the United States on June 17, 1960, and by 39 other Governments in that period. No House action necessary.

SALMON DEVELOPMENT PROGRAM IN CALIFORNIA: S. 3184 (Engle), H. R. 11343 (Hagen), H. R. 11352 (McFall), H. R. 11356 (Clem Miller), H. R. 11357 (George Miller), H. R. 11361 (Shelley), H. R. 11366 (Cohelan), and H. R. 11371 (Johnson) were introduced in the Senate and House, respectively, on Apr. 17, 1962. Would direct the Secretary of the Interior to initiate a salmon and steelhead development program in California. Would authorize an anadromous fish development program in California. This is an Administration measure, based on joint recommendations of the U. S. Fish and Wildlife Service and the California Department of Fish and Game. Existing facilities of the Bureau of Sport Fisheries of the Fish and Wildlife Service and those of the California Department of Fish and Game would be utilized to the fullest extent. The Senate bill was referred to the Committee on Commerce, and the House bills to the Committee on Merchant Marine and Fisheries.

SCIENCE AND TECHNOLOGY REORGANIZATION PLAN MESSAGE FROM THE PRESIDENT: The House and Senate on Mar. 29, 1962, received from the President "Reorganization Plan No. 2 of 1962, Relating to Certain Reorganizations in the Field of Science Technology" (House Doc. 372); referred to the Committee on Government Operations of the Senate and the House. "Part I of the reorganization plan establishes the Office of Science and Technology as a new unit within the Executive Office of the President; places at the head thereof a Director appointed by the President and by the advice and consent of the Senate and makes provision for a Deputy Director similarly appointed; and transfers to the Director certain functions of the National Science Foundation." Message points out "... the further steps contained in Part I of the reorganization plan are now needed in order to meet most effectively new and expanding requirements brought about by the rapid and far-reaching growth of the Government's research and development programs. These requirements call for the further strengthening of science organization at the Presidential level and for the adjustment of the Foundation's role to reflect changed conditions. The Foundation will continue to originate policy proposals and recommendations concerning the support of basic research and education in the sciences, and the new Office will look to the Foundation to provide studies and information on which sound national policies in science and technology can be based. . . ." Part II of the reorganization plan provides for certain reorganizations within the National Science Foundation which will strengthen the capability of the Director of the Foundation to exert leadership and otherwise further the effectiveness of administration of the Foundation.

TARIFF CLASSIFICATION RESTATEMENT IN TARIFF ACT OF 1930: Senate Report No. 1317, Tariff Classification Act of 1962 (Report from the Senate Committee on Finance, Senate, 87th Congress, 2nd Session, to accompany H. R. 10607), 12 pp., printed. Committee reported the bill favorably without amendment and recommended passage. Contains the purpose

of the bill, background, summary of the bill, and technical explanation of the bill. The purpose of this bill is to provide for the adoption and implementation of revised tariff schedules and to make certain amendments in existing law necessitated by the adoption of such revised schedules.

The Senate on April 17, 1962, passed with amendment H. R. 10607 to amend the Tariff Act of 1930 and certain related laws to provide for the restatement of the tariff classification provisions, and for other purposes.

TRADE AGREEMENTS: A message from the President (H. Doc. 358), Trade Agreements With The European Economic Community, The United Kingdom, Norway, and Sweden, was received Mar. 7, 1962, in the House and Mar. 8, 1962, in the Senate. The message transmits copies of trade agreements with the European Economic Community, the United Kingdom, Norway, and Sweden, including schedules signed on behalf of the United States on Mar. 5 and Mar. 7, 1962, and reports actions taken with respect to peril points. Referred to the House Committee on Ways and Means and the Senate Committee on Finance.

TRANSPORTATION SYSTEM: On April 5, 1962, the House and the Senate received a message from the President (H. Doc. 384), The Transportation System of Our Nation. Recommendations made in the message would affect and benefit the fishing industry. The fishery exemption from I. C. C. economic regulation of motor carriers will be continued. A policy of encouraging less regulation of carriers and more freedom to adapt to competitive situations was suggested. With more competition among carriers, fishery shippers should benefit through better rates and services. The agricultural and fishery exemptions were discussed separately in the message. Heretofore, it was usual to mention only the agricultural exemption. The President also requested encouragement of through and joint rates and service among the several modes of transportation. The message was referred to the House Committee of the Whole House on the State of the Union and the Senate Committee on Commerce.

TRADE EXPANSION ACT OF 1962: H. R. 11102 (Blitch) introduced in the House on April 4, 1962, to replace the existing tariff schedules and trade agreements provisions of the Tariff Act of 1930, and for other purposes; referred to the Committee on Ways and Means. Principle purpose is to expand foreign trade with other nations when such trade is mutually beneficial to the United States and other friendly nations and when it does not injure United States industry or agriculture or create domestic unemployment.

The House Committee on Ways and Means, on April 11, 1962, concluded its public hearings (which began on Mar. 12, 1962) on H. R. 9900, the "Trade Expansion Act of 1962" to provide assistance to business enterprises and individuals to facilitate adjustments made necessary by the trade policy of the United States. The purpose is to offset the impact on American businesses, especially smaller businesses, of a more liberal national trade policy by a broad-gauge program of adjustment assistance. During the hearings testimony was heard from members of Congress, Government agencies, and industry. The Committee was scheduled to meet in executive session on April 12, 1962.

TRADE POLICY EFFECTS ON UNEMPLOYMENT: H. R. 10861 (Baker) introduced in the House on Mar. 21,

1962, to assist in alleviating the effects of unemployment resulting from Federal tariff or trade policy by establishing a temporary program of supplementary grants for States which provide for liberalization of

their unemployment compensation payments to persons unemployed because of Federal tariff or trade policy; referred to the Committee on Ways and Means.



SPRING IS SMELT TIME

"The smelt are running" is the spring cry of people fortunate enough to live in the Great Lakes area. Professionals and amateurs--old and young--men and women--join in the sport of smelt dipping.

The smelt of the Great Lakes area leave the lakes and throng into the tributary streams to spawn as soon as the ice breaks up in the spring. Coming up the rivers in unbelievable numbers, their glittering bodies darken the water. Hundreds of people line the banks waiting to scoop them up. The dipping continues throughout the night, with bonfires and lanterns on the river banks gaily illuminating the scene.

Not the outdoor type--if so, do your dipping at your local market. You will find these tiny delectable fish, about 10 to 12 to the pound, either fresh or frozen, just waiting to be enjoyed by you and your family.

Either way you do your dipping, the home economists of the U. S. Bureau of Commercial Fisheries suggest the following kitchen-tested recipe to aid you in cooking your catch.

BAKED SMELT

3 pounds whole smelt, fresh or frozen
1 teaspoon salt
Dash pepper
1 teaspoon paprika

2 tablespoons lemon juice
1/2 teaspoon grated onion
1/4 cup butter or other fat,
melted

Thaw frozen fish. Dress fish by removing entrails. Wash and drain on absorbent paper. Place in a single layer in a well-greased baking pan. Combine remaining ingredients and pour over fish. Bake in a moderate oven, 350° F., for 20 to 25 minutes or until fish flakes easily when tested with a fork. Serves 6.



Editorial Assistant--Ruth V. Keefe

Compositors--Jean Zalevsky, Alma Greene, Helen Paretti, and Raie Carron

* * * * *

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FISHERY INDICATORS

CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

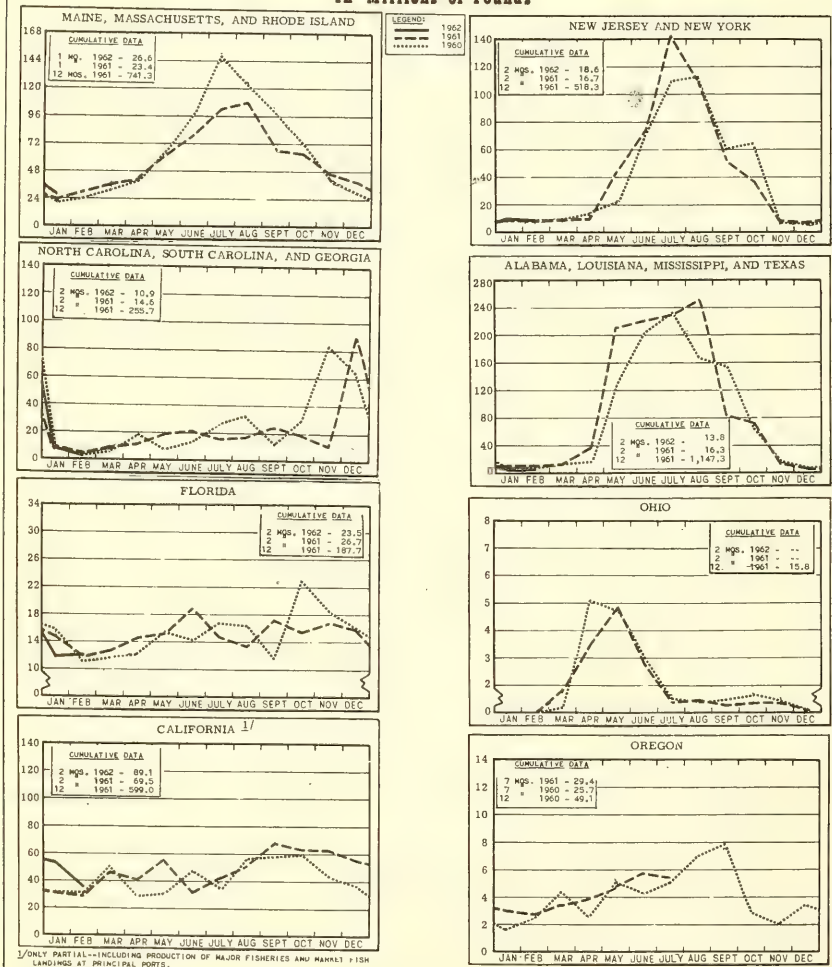
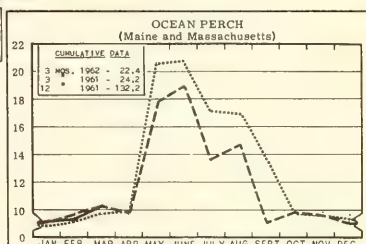
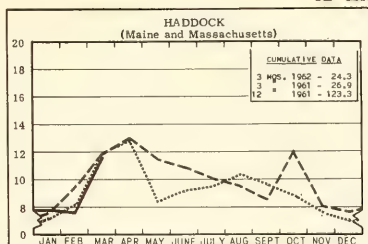
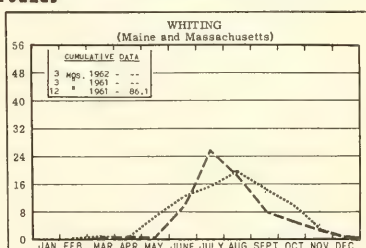
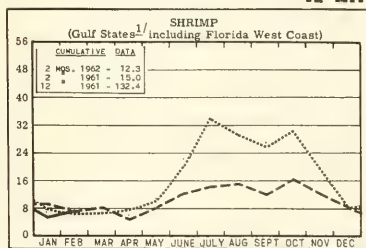


CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

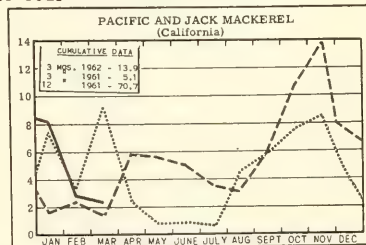
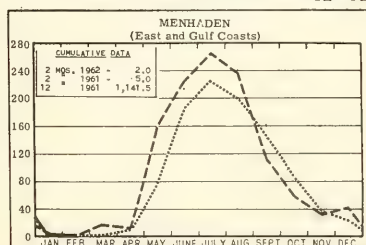


In Millions of Pounds



^{1/} LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons



In Thousands of Tons

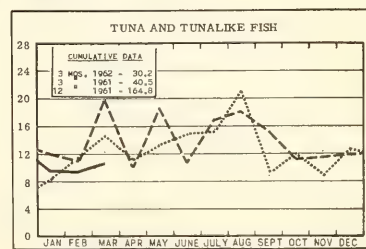
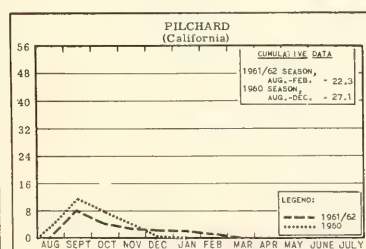
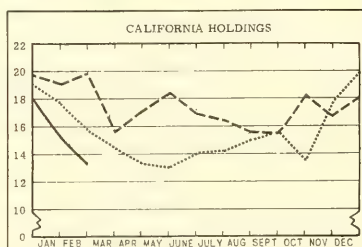
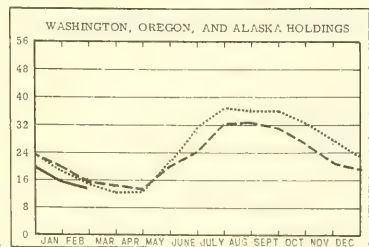
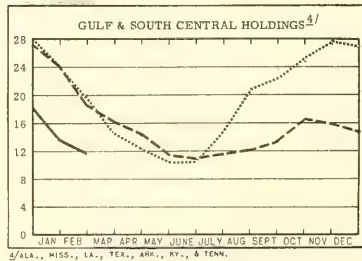
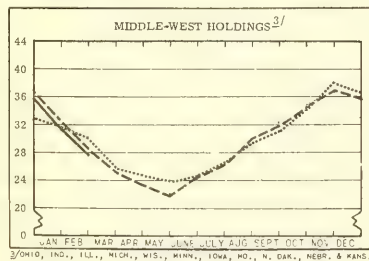
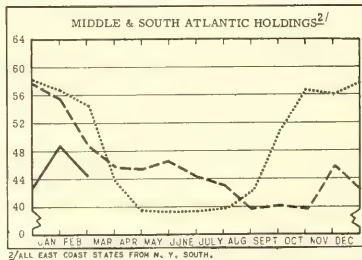
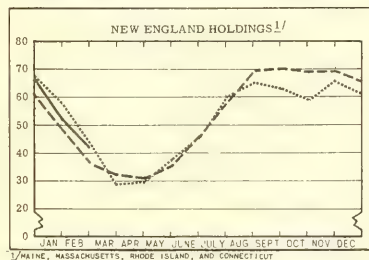
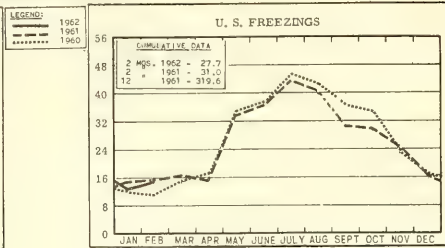
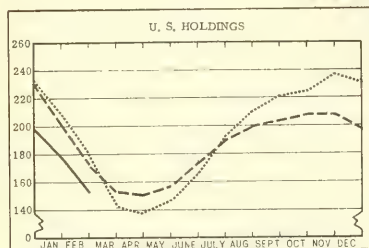


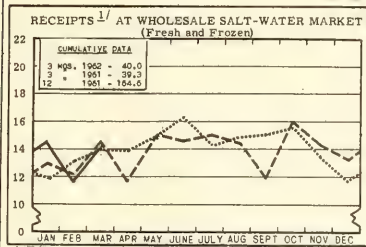
CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds

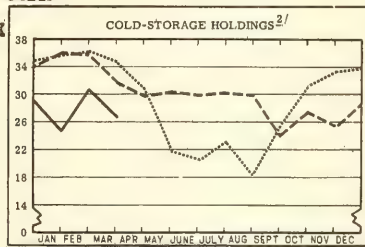


* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS In Millions of Pounds

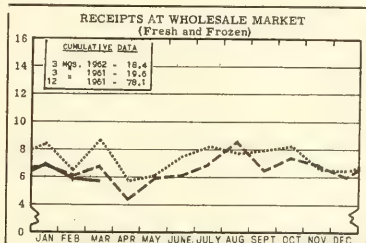


NEW YORK CITY

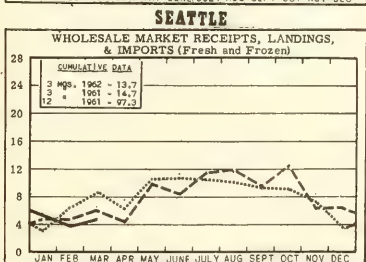
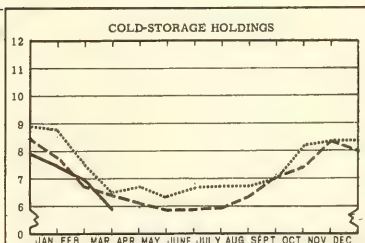


^{1/}INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

^{2/}AS REPORTED BY PLANTS IN METROPOLITAN AREA.



CHICAGO



LEGEND:
— 1962
--- 1961
..... 1960

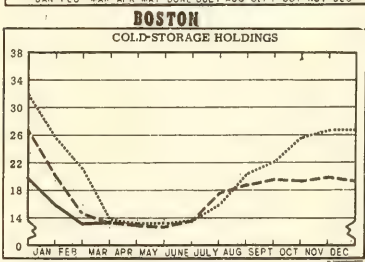


CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA

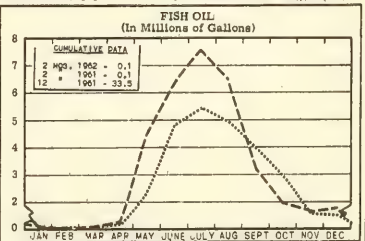
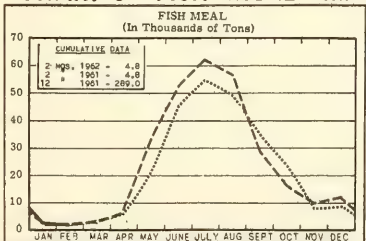
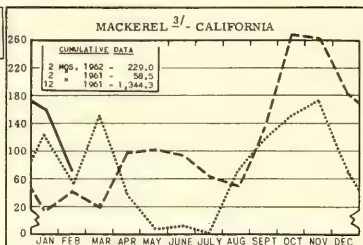
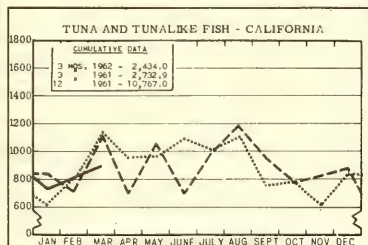
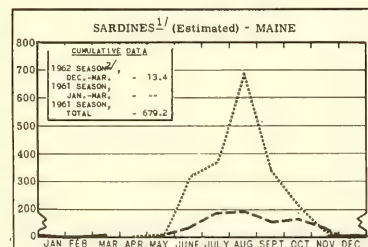
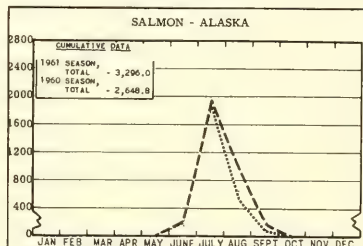
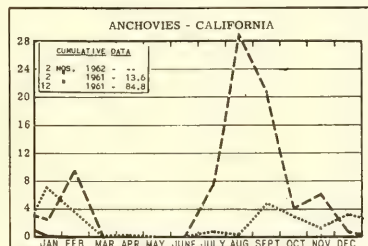


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



^{3/} INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.



STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES....	100	$\frac{1}{4}$ drawn	$3\frac{1}{2}$ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# $\frac{1}{2}$ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	$\frac{1}{2}$ -lb.	8 oz.

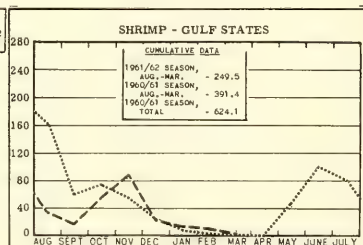
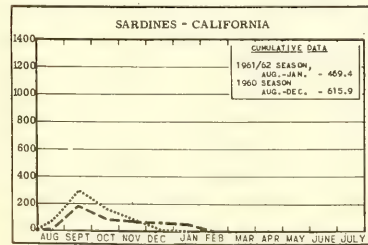
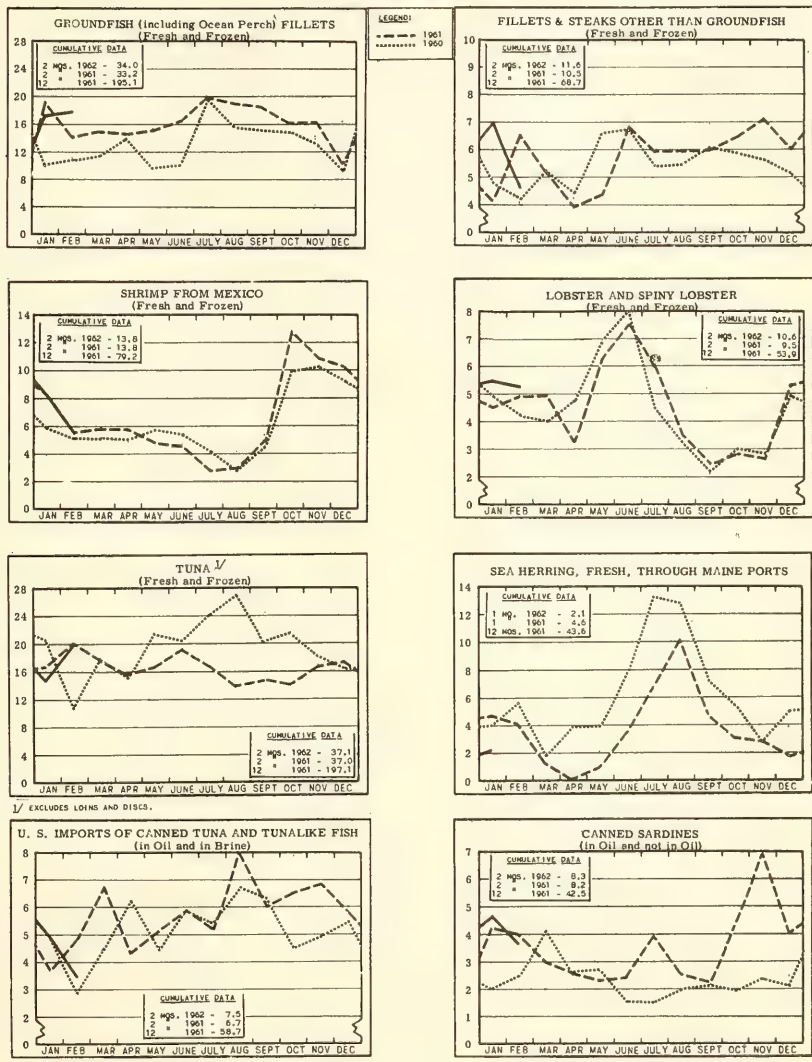
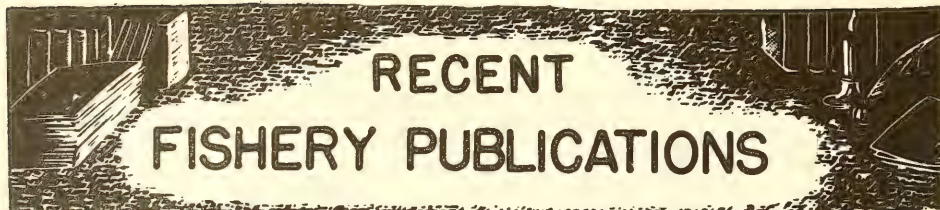


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds





RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE
FEDERAL BUREAU OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHING-
TON, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SL - BRANCH OF STATISTICS LIST OF DEALERS IN AND PRODUCERS
OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR. - FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIM-
ITED DISTRIBUTION).

- | Number | Title |
|----------|--|
| CFS-2796 | - Great Lakes Fisheries, 1960, Annual Sum-
mary, 13 pp. |
| CFS-2800 | - Fish Sticks and Portions, 1961, Annual
Summary, 3 pp. |
| CFS-2806 | - Massachusetts Landings, October 1961,
5 pp. |
| CFS-2810 | - Frozen Fish Report, January 1962, 8 pp. |
| CFS-2811 | - Michigan Landings, December 1961, 2 pp. |
| CFS-2813 | - Fish Meal and Oil, December 1961, 4 pp. |
| CFS-2814 | - Virginia Landings, December 1961, 4 pp. |
| CFS-2815 | - Florida Landings, December 1961, 8 pp. |
| CFS-2816 | - New York Landings, December 1961, 5 pp. |
| CFS-2818 | - Maine Landings, December 1961, 4 pp. |
| CFS-2819 | - Rhode Island Landings, December 1961,
3 pp. |
| CFS-2820 | - North Carolina Landings, December 1961,
4 pp. |
| CFS-2821 | - Shrimp Landings, August 1961, 6 pp. |
| CFS-2822 | - Shrimp Landings, September 1961, 6 pp. |
| CFS-2823 | - Shrimp Landings, October 1961, 6 pp. |
| CFS-2824 | - Alabama Landings, December 1961, 3 pp. |
| CFS-2825 | - Minnesota Landings, December 1961, 2 pp. |
| CFS-2826 | - Louisiana Landings, November 1961, 2 pp. |
| CFS-2827 | - California Landings, November 1961, 4 pp. |
| CFS-2828 | - Georgia Landings, December 1961, 2 pp. |
| CFS-2834 | - Mississippi Landings, December 1961, 2 pp. |
| CFS-2835 | - North Carolina Landings, January 1962, 3 pp. |
| CFS-2836 | - Georgia Landings, January 1962, 2 pp. |
| CFS-2840 | - Shrimp Landings, November 1961, 6 pp. |
| CFS-2841 | - Texas Landings, December 1961, 3 pp. |
| CFS-2842 | - Wisconsin Landings, January 1962, 2 pp. |
| CFS-2843 | - Florida Landings, January 1962, 8 pp. |
| CFS-2845 | - Fish Meal and Oil, January 1962, 2 pp. |
| CFS-2847 | - Louisiana Landings, December 1962, 2 pp. |

Wholesale Dealers in Fishery Products, 1961 (Revised):

- SL-24 - Minnesota (Great Lakes Area), 1 p.
SL-25 - Wisconsin (Great Lakes Area), 4 pp.
SL-26 - Illinois (Great Lakes Area), 2 pp.

- SL-27 - Indiana (Great Lakes Area), 1 p.
SL-28 - Michigan (Great Lakes Area), 4 pp.
SL-29 - Ohio (Great Lakes Area), 3 pp.
SL-30 - Pennsylvania (Great Lakes Area), 1 p.
SL-31 - New York (Great Lakes Area), 2 pp.
SL-47 - Louisiana (Mississippi River and Tributaries),
1 pp.

SSR-Fish. No. 381 - Oceanographic Observations in
Bristol Bay and the Bering Sea, 1939-41, USCGT
Redwing, by Felix Favorite, John W. Schantz, and
Charles R. Hebard, 326 pp., illus., July 1961.

SSR-Fish. No. 385 - Sea Surface Temperature Month-
ly Average and Anomaly Charts Northeastern Pa-
cific Ocean, 1947-58, by James H. Johnson, 58 pp.,
illus., August 1961.

SSR-Fish. No. 393 - Menhaden Eggs and Larvae from
M/V Theodore N. Gill Cruises, South Atlantic Coast
of the United States, 1953-54, by John W. Reintjes,
10 pp., illus., September 1961.

Dep. No. 644 - Machines Solve Handling Problems in
Oyster Plants.

Dep. No. 645 - Effect of Butylated Hydroxy Toluene and
Potassium Sorbate on Development of Rancidity in
Smoked Mullet.

Dep. No. 646 - Equipment Note No. 11 - A Great Lakes
Stern-Ramp Trawler.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE
BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH
AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

- | Number | Title |
|--------|---|
| MNL-66 | - Japan's Agar-Agar Industry, 9 pp. |
| MNL-67 | - Fisheries Survey Reports--Ivory Coast and
Dahomey, 6 pp. |

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPE-
CIFIC OFFICE MENTIONED.

Halibut and Troll Salmon Landings and Ex-Vessel

Prices for Seattle, Alaska Ports and British Colum-
bia, 1961-1960, 35 pp. (Market News Service, U. S.
Fish and Wildlife Service, 706 Federal Office Bldg.,
Seattle 4, Wash.) Gives landings and ex-vessel
prices of troll salmon and halibut at leading United
States ports of the Pacific Coast; ex-vessel halibut
prices and landings at leading British Columbia
ports; United States and Canadian Pacific Coast

halibut landings, 1937-1961; Seattle season averages of ex-vessel halibut prices, 1952-1961; and troll salmon landings and receipts at Seattle and Alaskan ports, with comparative data.

(Baltimore) Monthly Summary--Fishery Products, January 1962, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 103 S. Gay St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices for fresh fishery products on the Baltimore market; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, February 1962, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, January and February 1962, 8 pp., each. (Market News Service, U. S. Fish and Wildlife Service, Rm. 609, 600 South St., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas, from Mexico; and sponge sales; for the months indicated.

New England Fisheries--Monthly Summary, January and February 1962, 22 pp., each. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Review of the principal New England fishery ports. Presents data on fishery landings by ports and species; industrial-fish landings and ex-vessel prices; imports; cold storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the months indicated.

New York City's Wholesale Fishery Trade--Monthly Summary--December 1961, 24 pp. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, February 1962, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, February 1962, 6 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle 4, Wash.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl receipts reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

California Fishery Market News Monthly Summary, Part I--Fishery Products Production and Market Data, January 1962, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, sardines, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; Oregon and Washington receipts (domestic and imports) of fresh and frozen tuna and tunalike fish; for the month indicated.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Abundance and Age of Kvichak River Red Salmon Smolts, by Orra E. Kerns, Jr., Fishery Bulletin 189 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61), 24 pp., illus., printed, 20 cents, 1961.

Abundance and Distribution of Eggs and Larvae and Survival of Larvae of Jack Mackerel (TRACHURUS SYMMETRICUS), by David A. Farris, Fishery Bulletin 187 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61), 36 pp., illus., printed, 30 cents, 1961.

Calanoid Copepods from Equatorial Waters of the Pacific Ocean, by George D. Grice, Fishery Bulletin 186 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61) 80 pp., illus., printed, 45 cents, 1961.

Distribution and Abundance of Skipjack in the Hawaii Fishery, 1952-53, by Herbert H. Shippen, Fishery Bulletin 188 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61), 24 pp., illus., printed, 20 cents, 1961.

Early Developmental Stages of Pink Shrimp, PENAEUS DUORARUM, from Florida Waters, by Sheldon Dobkin, *Fishery Bulletin* (from *Fishery Bulletin of the Fish and Wildlife Service*, vol. 61), pp. 321-349, illus., printed, 30 cents, 1961.

Serological Studies of Atlantic Redfish, by Carl J. Sindermann, *Fishery Bulletin* 191 (from *Fishery Bulletin of the Fish and Wildlife Service*, vol. 61), 8 pp., printed, 15 cents, 1961.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ALGAE:

An Introductory Account of the Smaller Algae of British Coastal Waters. Part VIII--Euglenophyceae--Euglenineae, by R. W. Butcher, *Fishery Investigations Series IV*, 23 pp., illus., printed, 12s. 6d. (about US\$1.75). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England.

ANADROMOUS FISH:

Seasonal Races Among Anadromous Fishes, by V. A. Abakumov, *Translation Series No. 353*, 19 pp., processed. (Translated from the Russian, *Voprosy Ikhtologii*, No. 17, 1961, pp. 179-190.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B.C., Canada, 1961.

ANGOLA:

Contribuição para o Estudo da Pesca de Arrasto em Angola--Cartas Provisorias da Pesca de Arrasto da Costa de Angola (Contribution to the Study of Fish Trawling in Angola--Preliminary Charts of Trawling Areas Along the Coast of Angola), by Pedro da Franca, Fernando Correia da Costa, and Henrique Serpa de Vasconcelos, *Notas Mimeografadas do Centro de Biologia Piscatoria No. 24*, 22 pp., 9 charts, processed in Portuguese. Centro de Biologia Piscatoria, Ministerio do Ultramar, Junta de Investigações do Ultramar, Lisbon, Portugal, 1961.

ANTI-FOULING PAINTS:

Mechanism of Antifouling Action in Shipbottom Paints, by Charles E. Lane and Francis J. Bernard, *Final Report No. 62-1*, 13 pp., processed. The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

AQUARIUM FISH:

Studies on the Relationship Between Sexual Maturation and Growth in LEBISTES, by Gunnar Svardson, *Translation Series No. 126*, 35 pp., illus., processed. (Translated from the German, *Mitteilungen der Statens Undersöknings- och Forsöksanstalt för Sötvattensfisket*, No. 21, 1943, pp. 1-48.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B.C., Canada, 1959.

ARAL SEA:

The Effect of the Fishery on the Productivity of Bream Stocks of the Aral Sea, by E. A. Bervald, *Translation*

Series No. 354, 16 pp., illus., processed. (Translated from the Russian, *Voprosy Ikhtologii*, No. 7, 1956, pp. 21-32.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B.C., Canada, 1961.

BARNACLES:

Absorption and Excretion of Copper Ion During Settlement and Metamorphosis of the Barnacle, BALANUS AMPHITRITE NIVEUS, by Francis J. Bernard and Charles E. Lane, 11 pp., illus., printed. (Reprinted from *Biological Bulletin*, vol. 121, no. 3, December 1961, pp. 438-448.) The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

BELGIUM:

'La Peche Belge en 1961: 46,365 Tonnes' (Belgian Fisheries in 1961: 46,365 Tons), by V. Van der Kimpen, article, *La Peche Maritime*, No. 1007, February 1962, pp. 81-82, printed in French. *La Peche Maritime*, 190 Boulevard Haussmann, Paris, France.

CANADA:

Annual Report of the Fisheries Research Board of Canada, 1960/61 (For the Fiscal Year Ended March 31, 1961), 193 pp., illus., printed in English with additional introduction in French, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, 1961. A comprehensive summary of the work of the Fisheries Research Board of Canada and its field stations during 1960/61. The research work of the Board is divided into three principal branches: research in aquatic biology with emphasis on fishery biology, research in fishery technology, and research in oceanography. The Board's 177-foot research vessel A. T. Cameron continued to serve as a very valuable research "tool" and is making possible the gathering of information on populations of Northwest Atlantic species of fish of particular importance to the fishing industry. Oceanographic studies in Atlantic, Arctic, and Pacific waters are described. Detailed reports cover activities of the Board's biological and technological stations. A list of the publications and reports published during 1960 by the Board is included.

British Columbia Catch Statistics, 1961 (By Area and Type of Gear), 164 pp., illus., processed. Department of Fisheries of Canada, 1110 W. Georgia St., Vancouver 5, B.C., Canada, February 2, 1962. The eleventh annual report of fish-catch statistics for British Columbia based on Departmental copies of sales slips that are completed by all commercial fish buyers operating within the Province. The report is divided into three sections: (1) summary of landings by district and total landed value of all fish; (2) highlights of catch statistics--a general review of significant events of salmon fishing in each area and general review for other types of fish; and (3) detailed district and area monthly statistics by type of gear. Certain economic, weather, and conservation factors that have a bearing on the catch are also reviewed.

The Canadian Fish Culturist, Issue 29, November 1961, 42 pp., illus., printed. Director, Information and Consumer Service, Department of Fisheries, Ottawa, Canada. Contains the following articles: "Fish Ponds in Canada--a Preliminary Account," by M. W. Smith; "Vital Statistics of Trout Populations in New York Farm Ponds," by Alfred W. Eipper; "A Review of Farm Trout Ponds in Southern Ontario," by H. R.

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McCrimmon; "The Genetics of Selection in a Fish Population," by L. Butler; "Selectivity and Hybridization in Management of Fish Stocks," by S. B. Smith; and "The Effects of Underwater Explosions on Yellow Perch," by R. G. Ferguson. The articles were among the papers presented at a symposium on "Farm Fish Ponds as a Technique of Fishery Management," at the fourteenth meeting of the Canadian Committee on Freshwater Fisheries Research, under the sponsorship of the Fisheries Research Board of Canada.

Journal of the Fisheries Research Board of Canada, vol. 18, no. 6, December 1961, pp. 893-1178, illus., printed, \$1.50. Queen's Printer and Controller of Stationery, Ottawa, Canada. Includes, among others, the following articles: "Proximate Composition of Canadian Atlantic Fish. III--Sectional Differences in the Flesh of a Species of Chondrostei, one of Chimaerae, and of Some Miscellaneous Teleosts," by D. I. Fraser, A. Mannan, and W. J. Dyer; "On the Chemical Composition of Eleven Species of Marine Phytoplankters," by T. R. Parsons, K. Stephens, and J. D. H. Strickland; "On the Pigment Composition of Eleven Species of Marine Phytoplankters," by T. R. Parsons; "Some Oceanographic Features of Juan de Fuca Strait," by R. H. Herlinveaux and J. P. Tully; "Order of Succession of Different Types of Infraoral Lamina in Landlocked Sea Lamprey (*Petromyzon marinus*)," by V. D. Vladikov and G. N. Mukerji; "Ocean Temperatures and Their Relation to Albacore Tuna (*Thunnus germon*) Distribution in Waters off the Coast of Oregon, Washington, and British Columbia," by Dayton L. Alverson; and "Diving and Photographic Techniques for Observing and Recording Salmon Activities," by D. V. Ellis.

Journal of the Fisheries Research Board of Canada, vol. 19, no. 1, January 1962, pp. 1-171, illus., printed, \$1.50. Queen's Printer and Controller of Stationery, Ottawa, Canada. Includes, among others, the following articles: "Physical Characteristics and Chemical Composition of Two Subspecies of Lake Trout," by Claude E. Thurston; "The Pollett Apron Seine," by P. F. Elson; "Hydrographic and Meteorological Factors Affecting Shellfish Toxicity at Head Harbour, New Brunswick," by A. Prakash and J. C. Medcof; "Growth and Reproduction of the Longnose Sucker, *Catostomus catostomus* (Forster), in Great Slave Lake," by Roy H. D. Harris; "Preliminary Studies on the Visible Migrations of Adult Salmon," by D. V. Ellis; "Radioactive Caesium as a Fish and Lamprey Mark," by D. P. Scott; and "Fat Hydrolysis in Frozen Fillets of Lingcod and Pacific Gray Cod," by J. D. Wood and S. A. Haqq.

Regulations Respecting the Construction and Inspection of Fishing Vessels Exceeding Eighty Feet Registered Length (P. C. 1956-1077 of July 12th, 1956, Amended by P. C. 1956-1403 of September 13th, 1956), 43 pp., printed, 50 Canadian cents. Queen's Printer, Ottawa, Canada, 1962.

CANNING MACHINERY:

Machine for Close Packing of Small Fish into Cans, by M. A. Danilov and L. F. Gerasimenko, patent described in *Byulleten' Izobreteniy*, No. 7, 1959, p. 69, printed. *Byulleten' Izobreteniy*, c/o Mezhdunarodnaya Kniga, Moscow 20, U.S.S.R.

CUBAN SNAPPER:

LUTIANUS AMBIGUUS, by Zeida Rodriguez Pino, Contribution No. 14, 19 pp., illus., printed. Centro de Investigaciones Pesqueras del Departamento de Pesca del Instituto Nacional de Reforma Agraria, Playa Habana, Bauta, Cuba, November 1961.

DOGFISH:

A Method of Determining the Age and the Composition of the Catches of the Spiny Dogfish (*SQUALUS ACANTHIAS* L.), by S. Kaganovskaia, Translation Series No. 281, 3 pp., processed. (Translated from the Russian, *Vestnik Dalnevostochnovo Filiala Akademii Nauk SSSR* for 1933, No. 1-3, 1933, pp. 139-141.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1960.

EXPORTS:

Preparing Shipments to the United Kingdom, WTIS Part 2, Operations Report No. 62-6, 8 pp., printed, single copy 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A report giving information on the preparation of shipments for export to the United Kingdom. It covers the preparation of shipping documents, information on labeling and marking, customs procedures, and related subjects.

FISH POPULATION:

Concerning the Influence of Exploitation on the Structure of the Population of a Commercial Fish, by G. V. Nikolsky, Translation Series No. 280, 26 pp., illus., processed. (Translated from the Russian, *Zoologicheskii Zhurnal*, vol. 37, no. 1, 1958, pp. 41-56.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1961.

FOOD AND AGRICULTURE ORGANIZATION:

Regional Fisheries Advisory Commission for the South West Atlantic, Note by Director-General, C61/LIM/8, 9 pp., processed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, November 4, 1961.

Report--Technical Committee on Fisheries (FAO Conference), C 61/FI/6/Rev. 1, 15 pp., processed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, November 10, 1961.

FOREIGN TRADE:

Licensing and Exchange Controls--Brazil, WTIS Part 2, Operations Report No. 61-93, 8 pp., printed, 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

Licensing and Exchange Controls--Ecuador, WTIS Part 2, Operations Report No. 61-94, 4 pp., printed, 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

FRANCE:

Decree No. 60-1524 on the Control of Manufacture of Canned and Semi-Preserved Fish, Shellfish and Oth-

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

er Marine Animals," Food and Agricultural Legislation, vol. X, no. 2, December 30, 1960, France, XVII/2, 8 pp., printed, \$1. Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y.

FUR SEALS:

"Furor over Alaskan Seals," article, Business Week, no. 1693, February 10, 1962, pp. 60, 62, 64, illus., printed. Business Week, McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N. Y. Discusses the cancelling of the exclusive contract for processing Alaska fur seal skins held by a St. Louis firm. The United States Department of the Interior manages the seal herd on the Pribilof Islands under the terms of a 1911 treaty, and in return takes 70 percent of the harvest. The company has had a contract to process and sell all U. S. Alaska fur seal skins for 40 years. However, this contract is to be cancelled effective December 31, 1962.

GENERAL:

Fishing News International, vol. 1, no. 2, January 1962, 120 pp., illus., printed, single copy 6s. 6d. (about 91 U. S. cents). Fishing News International, Arthur J. Heighway Publications Ltd., Ludgate House, 110 Fleet St., London EC4, England. Includes among others, these articles: "Focus on Japan," by Kozo Kitahara; "Fish Culture and the World's Protein Needs," by B. Havinga; "Role of Fisheries Nutrition in the Pacific Area," by Georg Borgstrom; "Trading in Fish under Stockholm Convention;" "Decline of British Herring Fisheries in the North Sea," by B. B. Parrish; "Preservation by Antibiotics and Penetrating Radiations. II," by H. L. A. Tarr; "Determining Optimum Speed for Trawlers," by D. Bogucki and J. Swiecki; "Production Specifications for Concentrated Fish Protein;" "Migrating Tuna;" "Midwater Trawling," by A. von Brandt; "Handling the Catch. 2--Mechanical Unloading," by Jan F. Minnee; "Ocean--Unique Stern Trawler from a French Design," by M. Jollant and D. E. F. Vickers; "Multi-Purpose Cod Liver Oil--Food, Medicine, and Nutrient;" and "The Fisheries Division of the Food and Agriculture Organization."

GHANA:

"Ghana Leads Africa with New Fishing Fleet," article, World Fishing, vol. 11, no. 2, February 1962, pp. 24-29, illus., printed, single copy 3s. (about 42 U. S. cents). World Fishing, John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London NW1, England. Describes the first of four tuna purse-seiners to be commissioned for the Ghanaian Government, which will fish for tuna, hake, John Dory, ocean perch, and other species on the continental shelf. Technical assistance has been rendered by United States and British interests. A cold-storage plant is being constructed and later a cannery will be built. The four vessels, in addition to stern trawlers, worth nearly US\$2.8 million, will lay the foundation of a modern fishing fleet which the Ghana Government will operate from the port of Tema.

ICELAND:

Verzlunarskyrslur Arid 1960 (External Trade 1960), 219 pp., printed in Icelandic with contents in English, 35 kroner (about 80 U. S. cents). Statistical Bu-

reau of Iceland, Reykjavik, Iceland, 1961. Details and statistical data on fishery exports are included.

INTERNATIONAL COMMISSIONS:

International Commission for the Northwest Atlantic Fisheries, Statistical Bulletin for the Year 1959, vol. 9, 70 pp., illus., printed. International Commission for the Northwest Atlantic Fisheries, Halifax, N. S., Canada, 1961. This bulletin is divided into two parts: Part 1 summarizes statistics on fishery landings in the Convention Area 1952-1959; and Part 2 includes statistical tables dealing with the fisheries in 1959. The presentation of the basic statistical data again has been designed to place emphasis on area and month of fishing. Contains a summary of all landings by species group, country, and statistical subdivision; landings of cod, haddock, ocean perch, halibut, and flounder for each type of gear; landings of each species by subarea; and fishing effort and landings by country, gear, and subarea.

INTERNATIONAL CONFERENCES:

Participation of the United States Government in International Conferences (July 1, 1959-June 30, 1960), Publication 7043, 270 pp., illus., printed, 65 cents. Office of International Conferences, Department of State, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Describes, among others, the following conferences: Law of the Sea Conference (London, Nov. 16-18, 1959); Second Conference on the Law of the Sea (Geneva, Mar. 17-Apr. 26, 1960); International Conference on Safety of Life at Sea (London, May 17-June 17, 1960); Third Caribbean Fisheries Seminar (St. Maarten, July 3-9, 1959); Inter-American Tropical Tuna Commission, Twelfth Annual Meeting (San Jose, Feb. 23-24, 1960); International North Pacific Fisheries Commission, Sixth Annual Meeting (Seattle, Nov. 2-7, 1959)--Committee on Biology and Research (Seattle, Oct. 19-26, 1960)--Working Party on the Distribution of Salmon in the High Seas (Tokyo, May 25-July 19, 1960)--Working Party on Long-Term Research Plans (Tokyo, June 6-17, 1960)--Editorial Committee (Tokyo, June 6-17, 1960)--Ad Hoc Committee on Abstention: Scientific Committee (Vancouver, Oct. 12-17, 1959); International Commission for the Northwest Atlantic Fisheries: Tenth Annual Meeting (Bergen, May 30-June 3, 1960)--Standing Committee on Research and Statistics and Sub-committees (Bergen, May 23-June 3, 1960); North Pacific Fur Seal Commission: Third Meeting (Moscow, Jan. 25-27, 1960); International Council for the Exploration of the Sea: Forty-seventh Annual Meeting (Copenhagen, Oct. 5-10, 1959); and International Whaling Commission: Twelfth Annual Meeting (London, June 20-24, 1960). Publication of this bulletin is being discontinued with this issue.

LAMPREYS:

The Damage Done by Lampreys to Fish Stocks, by V. A. Abakimov, Translation Series No. 274, 2 pp., processed. (Translated from the Russian, Rybnoe Khoz-yaistvo, vol. 35, no. 4, 1959, pp. 32-33.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1960.

MARINE SCIENCE:

Bulletin of Marine Science of the Gulf and Caribbean, vol. 11, no. 4, December 1961, pp. 483-649, illus.,

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printed, single copy \$2. Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Virginia Key, Miami 49, Fla. (For sale by University of Miami Press, Coral Gables, Fla.) Contains, among others, the following articles: "Normal Stages of the Early Development of the Flying Fish, *Hirundichthys affinis* (Gunther)," by John W. Evans; "Charting the Marine Environment of St. John, U.S. Virgin Islands," by Herman E. Kumpf and Helen A. Randall; and "A Checklist of the Flora and Fauna of Northern Florida Bay and Adjacent Brackish Waters of the Florida Mainland Collected during the Period July 1957 through September 1960," by Durbin Tabb and Raymond B. Manning.

NEW JERSEY:

Annual Report of Division of Fish and Game (For the Fiscal Year Commencing July 1, 1960, and Ending June 30, 1961), 61 pp., illus., printed. Division of Fish and Game, Department of Conservation and Economic Development, Trenton, N. J. The many and diverse activities and accomplishments covered in this report reflect broader concepts in New Jersey fish and game management. Included, among others, is a report on the Bureau of Fisheries Management, commercial fishing and landings for 1960 in New Jersey, fish catch by pound nets, and data on the Hudson and Delaware River shad industries.

NORWAY:

"Fiskernes Arsinntekter i 1960" (Annual Report on Fishermen in 1960), article, *Fiskets Gang*, vol. 48, no. 8, February 22, 1962, pp. 103-115, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Norges Fiskerier 1961" (Norway's Fisheries, 1961), article, *Fiskets Gang*, vol. 47, no. 52, December 28, 1961, pp. 806-808, printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"The Norwegian Canning Industry in 1961," article, *Tidsskrift for Hermetikindustri*, vol. 48, no. 1, January 1962, pp. 11-14, printed in English and Norwegian. *Tidsskrift for Hermetikindustri* (Norwegian Canners Export Journal), Stavanger, Norway. Gives statistical data on the canning of kippered herring, brisling, small sild, and other products in 1961, and the quantity and value of exports. Also discusses the EFTA agreement and the need for Norway to become a member of the Common Market.

"Norwegian Purse-Seiners Did Well in 1961," article, *World Fishing*, vol. 11, no. 2, February 1962, pp. 44, 47, illus., printed, single copy 3s. (about 42 U.S. cents). *World Fishing*, John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London NW1, England. When the winter herring fishery failed, Norwegian purse-seiners diverted their efforts to catching capelin, fat and small herring, and cod. Landings for most species except winter herring during 1961 exceeded those of previous years.

"Rapport om Makrell- og Habrannundersøkelser med f/f Peder Ronnestad i Skagerak-Nordsjøen, 4-30 October 1961" (Report on Mackerel and Shark Investigation of the Peder Ronnestad in Skagerak-North Sea, October 4-30, 1961), by Arne Revheim,

article, *Fiskets Gang*, vol. 48, no. 6, February 1962, p. 74, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Smalsild- og Feitsildtokt med f/f G. O. Sars i Tiden 30 August til 28 September 1961" (Small Herring and Fat Herring Cruise of the Research Vessel G. O. Sars during the Period August 30-September 28, 1961), by Olav Dragesund and Per Hognestad, article, *Fiskets Gang*, vol. 48, no. 1, January 4, 1962, pp. 6-9, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Stortralernes Lønnsomhet i 1960" (Profit from Operating Large Trawlers in 1960), article, *Fiskets Gang*, vol. 47, no. 51, December 21, 1961, pp. 783-797, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Transport av Levende Fisk i Bronnbater" (Transportation of Live Fish in a Vessel Provided with a Tank Containing Sea Water), by F. Kjelstrup-Olsen and G. Sundnes, article, *Fiskets Gang*, vol. 47, no. 49, December 7, 1961, pp. 760-761, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

OCEANOGRAPHY:

Geological and Geophysical Progress Report, January 18, 1962 (Unpublished Manuscript), 5 pp., processed. National Oceanographic Data Center, Washington, D. C.

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OREGON:

Research Briefs, vol. 8, no. 1, August 1961, 79 pp., illus., printed. Fish Commission of Oregon, 307 State Office Bldg., Portland 1, Oreg. Contains among others, articles on "The Oregon Trawl Fishery for Mink Food--1948-1957," by Walter G. Jones and

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

George Y. Harry, Jr.; "Biological Observations and Results of the 1960 John N. Cobb Exploratory Shrimp Cruise Off the Central Oregon Coast," by Lael L. Ronholt and Austin R. Magill; "Sixth Progress Report on Salmon Diet Experiments," by Russell O. Sinnhuber and others; "Seventh Progress Report on Salmon Diet Experiments," by Duncan K. Law and others; "Occurrence of the California Halibut in Oregon Waters," by Charles D. Snow and Raymond N. Breuser; "Two Diseases New to Adult Pacific Salmon," by James W. Wood; and "Chinook and Silver Salmon Spawning Together," by Raymond N. Breuser.

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"Direct Observation of Spawning in the Blacklip Pearl Shell Oyster (*Pinctada margaritifera*) and the Thorny Oyster (*Spondylus* sp.)," by J. S. Bullivant, article, *Nature*, vol. 193, no. 4816, February 17, 1962, pp. 700-701, illus., printed. *Nature*, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

PARASITES:

The Parasite Fauna and the Species Relationships of the Kamchatka Azabach, ONCORHYNCHUS NERKA infrasp. ASABATCH Berg 1932, by A. Kh. Akhmerov, Translation Series No. 283, 4 pp., processed. (Translated from the Russian, *Doklady Akademii Nauk SSSR*, vol. 94, no. 5, 1954, pp. 969-971.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1960.

Zoogeographical Analysis and a Hypothesis of the Origin of the Helminth Fauna of the Vertebrates of Sakhalin, by A. I. Krotov, Translation Series No. 334, 13 pp., processed. (Translated from the Russian, *Zoologicheskii Zhurnal*, vol. 39, no. 4, 1960, pp. 481-489.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1961.

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The Philippine Journal of Fisheries, vol. 6, no. 1, January-June 1958, 105 pp., illus., printed. Agricultural Information Division, Department of Agriculture and Natural Resources, Quezon City, Philippines. Includes, among others, these articles: "The Propagation of the Grey Mullet in Northern Luzon Brackish-Water Fishponds," by Guillermo J. Blanco and Pascual A. Acosta; "Kapis (Pearl Oyster) Farming at the Tidal Flats of Bacoar Bay, Luzon," by Guillermo J. Blanco; "Socio-Economic Problems Affecting the Production, Processing and Distribution of Fisheries Products," by Jose C. de la Cruz; and "Research Activities on Marine Fisheries Biology in 1957," by Klaus Tiews.

PORTUGUESE MAN-OF-WAR:

"Fishers of the High Seas," by Charles E. Lane, article, *Ciba Journal*, no. 19, Autumn 1961, pp. 32-35, illus., printed. *Ciba Journal*, Ciba Limited, Basle, Switzerland. Compares the structure of the Portuguese man-of-war (*Physalia physalis*) with a modern whaling operation. This brightly colored invertebrate has many long, inconspicuous tentacles dependent from its lower side. These tentacles are covered with stinging cells with which the prey is paralyzed, after which it is entangled and killed, then conveyed to the digestive organisms of the animal. Concludes the author "thus we see that the

most elaborate, sophisticated techniques invented by man for the capture of elusive marine mammals were antedated by millions of years by methods and equipment which the most primitive multicellular animals evolved under the irresistible drive of natural selection and adaptive survival."

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Annual Fish Passage Report, North Pacific Division, Bonneville, The Dalles and McNary Dams, Columbia River, Oregon and Washington, 1960, 64 pp., illus., processed. U. S. Army Engineer District, Portland, Ore., 1961.

On the Artificial Raising of the Level of Water on the Spawning Grounds of Far-Eastern Salmon, by I. S. Vasilev, Translation Series No. 351, 2 pp., processed. (Translated from the Russian, *Rybnoe Khoziaistvo*, No. 7, 1957, pp. 70-71.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, July 1961.

The Functional Importance of the Pre-Spawning Changes in the Skin of Salmon (as Exemplified by the Genus ONCORHYNCHUS), by A. I. Smirnov, Translation Series No. 348, 14 pp., processed. (Translated from the Russian, *Zoologicheskii Zhurnal Akademii Nauk SSSR*, vol. 38, no. 5, 1959, pp. 734-744.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1961.

Local Stocks of Pink Salmon in the Amur Basin and Neighbouring Waters, by R. I. Enutiina, 8 pp., illus., processed. (Translated from the Russian, *Voprosy Ikhtologii*, no. 2, 1954, pp. 139-143.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1960.

Spawning Grounds of Sockeye Salmon (ONCORHYNCHUS NERKA Walb.)—A Review of Their Geomorphology, Temperature Conditions and Hydrochemistry, by E. M. Krokhin, Translation Series No. 344, 31 pp., illus., processed. (Translated from the Russian, *Voprosy Ikhtologii*, No. 16, 1960, pp. 89-110.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1961.

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"Seaweed Technology," by E. Booth, article, *Nature*, vol. 193, no. 4813, January 27, 1962, pp. 331-332, printed. *Nature*, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y. The fourth International Seaweed Symposium was held at Biarritz, during September 18-25, 1961, and was attended by more than 220 scientists and industrialists from thirty-four countries. The various interests in algology, algal chemistry, and seaweed utilization were all evident at this Symposium, but in contrast with previous symposia, the botanical section was unusually well represented. In fact, almost two-thirds of the papers presented were on taxonomy and the culture of algae or their distribution, while the other papers were almost equally divided between pure chemistry and the various facets of the industrial utilization of seaweeds.

SHRIMP:

"Forsøksfiske etter Reker på Helgelandskysten" (Experimental Fishing for Shrimp on the Helgeland Coast), by Odd Selvag, article, *Fiskets Gang*, vol. 47,

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no. 3, January 19, 1961, pp. 56-58, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Over 43 Years of Co-Operative Shrimping," article, World Fishing, vol. 11, no. 2, February 1962, pp. 35-36, illus., printed, single copy 3s. (about 42 U.S. cents). World Fishing, John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London NW1, England. Discusses the operations of a Morecambe, England, shrimp-fishing cooperative and its use in recent years of a German shrimp-peeling machine, which can perform the work of 10 women.

SMALL BUSINESS MANAGEMENT:

Finding New Products for Small Manufacturers, by James F. Mahar and Dean C. Coddington, Management Research Summary, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1962. A summary of a report, titled "New Product Development--Reducing the Risk." The conditions essential to successful new-product development include: (1) surplus management capacity, (2) awareness of the firm's sales potential, (3) good financial condition, (4) budgeting of time and money to be used for new-product development, (5) a clear definition of the areas of interest, and (6) a creative atmosphere.

Reducing Management Waste, by Harvey C. Krentzman, Management Aid for Small Manufacturers No. 136, 4 pp., processed. Small Business Administration, Washington 25, D. C., January 1962. Reducing management waste can be achieved by: (1) being aware of why the business exists, (2) organizing and delegating responsibilities and authorities to accomplish the company's goals, (3) keeping the company in touch with the future, (4) establishing daily, weekly, or monthly goals for the top supervisors, (5) keeping top supervisors informed on company goals and progress, (6) guiding top supervisors around the pitfalls of management waste, and (7) evaluating periodically the daily procedures and systems used to avoid management waste.

Retirement Plans for Small Business, by Morton R. Gould, Management Aids for Small Manufacturers No. 135, 4 pp., processed. Small Business Administration, Washington 25, D. C., December 1961. A leaflet on retirement plans for small business. In summary, the author states that "Small businessmen are finding a growing interest in retirement plans. This interest is growing because the United States population is living longer, because of business competition, and because of the personal and business advantages to be gained through the use of such plans." The leaflet discusses the types of plans that can be used, pointing out the general advantages of each.

Small Suppliers and Large Buyers in American Industry, by Samuel Paul, Sidney C. Sufrin, and Marion A. Buck, Management Research Summary, 4 pp., processed. Small Business Administration, Washington 25, D. C., October 1961. A summary of a report, titled "Business Relations Between Small Suppliers and Large Buyers." Steady flow of business, assurance of payment without friction, size of order, and prestige value are the most benefi-

cial aspects of doing business with large buyers, according to the small suppliers who took part in the study. Suggested changes included improvement in bureaucratic practices, better timing of orders and delivery improvements, in technical relations, and consideration for small suppliers' problems.

Specialized Help for Small Business, by David R. Mayne, Small Marketers Aid No. 74, 4 pp., processed. Small Business Administration, Washington 25, D. C., December 1961. Small businessmen in increasing numbers are finding that outside assistance can be of real dollars-and-cents benefit in solving certain management problems. They are using such experts to help analyze and solve various management, operating, and technical problems. This leaflet discusses when and when not to use consultants. It highlights some specific financial savings small companies have made as the result of outside help, advice, and guidance.

Using a Combination Export Management Firm, by Richard G. Lurie, Management Aids for Small Manufacturers No. 137, 4 pp., processed. Small Business Administration, Washington 25, D. C., March 1962. Discusses the services which combination export management (CEM) firms offer manufacturers. Gives suggestions on the advantages of those services and how to select and locate a CEM firm that is best-suited for a particular company. In summary, the author states that "Small businessmen sometimes feel that they could sell abroad, but don't enter export markets because they aren't familiar with overseas selling. Or, in other cases, they can't afford to set up an export department to handle the specialized details of foreign trade. Many of these men are solving these problems by using a combination export management firm."

SOUTH AFRICA:

"Tunnies and Marlins of South Africa," by F. H. Talbot and M. J. Penrith, article, Nature, vol. 193, no. 4815, February 10, 1962, pp. 558-559, illus., printed. Nature, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

SOUTH PACIFIC:

"Better Barramundi Catches for Papuan Fishermen," by A. M. Rapson, article, South Pacific Bulletin, vol. 12, no. 1, January 1962, pp. 46-47, illus., printed, single copy 30 cents. South Pacific Commission, G.P.O. Box 5254, Sydney, Australia. Barramundi, or giant perch, is an excellent eating fish often found in abundance in Papuan waters. This article briefly reviews the extensive experiments being carried out with mesh nets and fish traps to improve barramundi catches by Papuan fishermen.

"Fisheries Development in the Cook Islands," by Ronald Powell, article, South Pacific Bulletin, vol. 12, no. 1, January 1962, pp. 50-53, 60-61, illus., printed, single copy 30 cents. South Pacific Commission, G.P.O. Box 5254, Sydney, Australia.

"Islanders Learn Modern Fishing Methods at SPC-FAO Centre," by Pierre Lusyne and Louis Devambez, article, South Pacific Bulletin, vol. 12, no. 1, January 1962, pp. 24-26, illus., printed, single copy 30 cents. South Pacific Commission, G.P.O. Box 5254,

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Sydney, Australia. A subregional Fisheries Training Center for Pacific islanders from Melanesian territories was held under the auspices of the South Pacific Commission and the Food and Agriculture Organization from August 23 to November 6, 1961, at Tulagi, British Solomon Islands. The twofold purpose was to train fishermen in the construction and operation of improved fishing gear, and in the operation of mechanized fishing craft.

SPAIN:

"La Conserva Espanola en los Mercados Europeos" (Spanish Canned Products in European Markets), by Alevin, article, *Industria Conservera*, vol. 27, no. 270, December 1961, p. 309, printed in Spanish. *Industria Conservera*, Calle Marques de Valladares, 41, Vigo, Spain.

"La Industria de Conservas de Pescado en Galicia y su Proyeccion Exportadora" (The Canned Fish Industry in Galicia and Its Export Possibilities), article, *Industria Conservera*, vol. 27, no. 270, December 1961, pp. 310-312, printed in Spanish. *Industria Conservera*, Calle Marques de Valladares, 41, Vigo, Spain

TRADE LISTS:

The Bureau of International Business Operations, U. S. Department of Commerce, Washington 25, D. C., has published the following mimeographed trade lists. Copies may be obtained by firms in the United States from that office or from Department of Commerce field offices at \$1 a copy.

Boat and Ship Builders, Repairers and Chandlers--India, 17 pp. (December 1961). Lists the names, addresses, and size of boat builders, and types of vessels (including fishing craft) built by each firm.

Boat and Ship Builders, Repairers and Chandlers--The Netherlands, 27 pp. (December 1961). Lists the names, addresses, and size of boat builders, and types of vessels (including fishing craft) built by each firm.

Canneries and Frozen Foods--Producers and Exporters--Austria, 11 pp. (January 1962). Lists the names and addresses, size of firms, and types of products handled by each firm. Includes producers and exporters of canned fish and anchovy paste.

Canneries and Frozen Foods--Producers and Exporters--Chile, 7 pp. (January 1962). Of the approximately 70 food canners in Chile, 27 can fish and shellfish. Sardines, tuna, bonito, and salmon-like fish are the principal canned fish products. A wide range of shellfish is processed, including black and white mussels, crabs, sea urchins, shrimp, clams, and limpets. In 1959 exports of canned shellfish to the United States amounted to approximately \$120,000 and to Great Britain \$43,000. Lists the names and addresses, size of firms, and types of products handled by each firm.

Fishing Industry Plant and Equipment--Importers, Dealers, and Manufacturers--Republic of South Africa, 20 pp. (January 1962). Lists the importers,

dealers, and manufacturers of fishing industry plant and equipment, size of firms, and type of equipment handled by each firm. Imported equipment for the fishing fleet and fish-processing plants consists of marine and industrial Diesel engines, fishnets, pumps, floats, generators, radio telephones, radar, echosounders, engineroom fittings, life-saving equipment and protective clothing, weighing machines for wet fish and for fish meal, can seamers and syringers, can labelers, carton packers, fork-lift equipment, stainless steel tubing, twin screw fish-meal presses, centrifugal oil separators, process-control instruments, and outboard motors.

TRAWLERS:

"Une Nouvelle Serie de Chalutiers Polonais de 61 m" (A New Series of Polish Trawlers of 61 Meters), article, *La Pêche Maritime*, No. 1007, February 1962, pp. 97-99, illus., printed in French. *La Pêche Maritime*, 190 Boulevard Haussmann, Paris, France.

TRAWLING:

"La Pêche par L'Arrière" (Stern Trawling), article, *La Pêche Maritime*, No. 1007, February 1962, pp. 93-96, illus., printed in French. *La Pêche Maritime*, 190 Boulevard Haussmann, Paris, France.

TUNA:

Age Determination of the Pacific Albacore of the California Coast, by Robert R. Bell, 11 pp., illus., printed. (Reprinted from *California Fish and Game*, vol. 48, no. 1, January 1962, pp. 39-48.) Department of Fish and Game, 722 Capitol Ave., Sacramento 14, Calif.

UNITED KINGDOM:

"Les Problemes de la Pêche Britannique" (British Fishery Problems), article, *La Pêche Maritime*, vol. 41, no. 1006, January 1962, pp. 54-58, illus., printed in French, single copy 17 NF (about US\$3.50). *La Pêche Maritime*, 190 Boulevard Haussmann, Paris, France.

VOLGA DELTA:

Availability of Sticklebacks as Food for the Predacious Fishes of the Volga Delta, by K. P. Fortunatova, Translation Series No. 331, 19 pp., illus., processed. (Translated from the Russian, *Zoologicheskii Zhurnal*, vol. 38, no. 11, 1959, pp. 1689-1701.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1961.

WORLD TRADE:

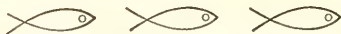
The following printed World Trade Information Service Reports, published by the Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Establishing a Business in Sudan, Economic Report No. 62-1, WTIS Part 1, 8 pp., illus., 15 cents, January 1962.

Import Tariff System of Libya, Operations Report No. 62-1, WTIS Part 2, 2 pp., 10 cents, January 1962.



TRUE FISH STORY ON TEMPORARY SHORTAGE OF MAINE SARDINES



Why Are Maine Sardines In Such Short Supply?

Because of a critical scarcity of fish, in areas where they could be harvested, the industry was able to produce only 675,000 cases during the entire 1961 season vs. an average of 2,250,000 cases for the previous 20 years. Virtually every cannery was affected and this was the only truly major shortage to hit the industry since 1938.

What Were The Reasons For The Scarcity Of Fish?

The best answer appears to be a temporary, and not unusual, change in the ocean currents in the Gulf of Maine. Scientists can see no biological connections and are writing it off as a quirk of nature. There were thousands of acres of fish offshore but there was seldom the right combination of wind, tide and temperatures to bring them in where they could be taken.

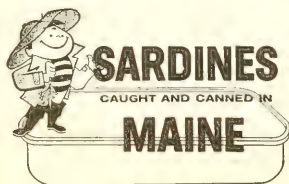
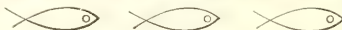
Why Is The Supply Situation Of A Temporary Nature?

The odds are with 90 years of history which has never seen two really poor fish years in a row. Scientists and others have not been able to find any evidence of why the fish will not be back in their old haunts in 1962. As an example consider the 659,000 case pack in 1938 which was followed by a whopping 2,171,000 cases in 1939. The industry is betting on it.

When Can You Expect Adequate Supplies To Again Be Available?

In order to help alleviate the shortage the State of Maine has authorized winter and early spring packing and this should help some. However normal major production should start in late May with Maine sardines rolling out of the factories to the trade in hundreds of carloads by mid-June. We hope you will reserve plenty of shelf space for stocking this high profit item again.

**THE MAINE CANNERS LOOK FOR ANOTHER
BANNER PRODUCTION SEASON IN 1962 AND HOPE THAT
THE TRADE WILL BEAR WITH THEM DURING THIS
TEMPORARY PERIOD OF SHORT SUPPLY!!**



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ROBERT H GIBBS JR

COMMERCIAL FISHERIES REVIEW



VOL. 24, NO. 6

JUNE 1962

FISH and WILDLIFE SERVICE
United States Department of the Interior
Washington, D.C.



COMMERCIAL FISHERIES REVIEW



A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor

Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

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5/31/63

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FISHERY TARIFF CONCESSIONS IN THE 1960-61 GATT NEGOTIATIONS

By Salvatore DiPalma*

SUMMARY

The United States has concluded, for the most part, the largest and most complex tariff negotiations in the 28-year history of the Trade Agreements Act. The negotiations were held under the auspices of the General Agreement on Tariffs and Trade (GATT). Concessions were exchanged by the United States with other countries on commodities with a total trade value of several billion dollars. Duty rates on a wide range of industrial, agricultural, mineral, and fishery products will be reduced as a result of the negotiations.

The tariff conference, which opened in Geneva in September 1960, was the fifth in a series of multilateral meetings held since 1947 for the purpose of exchanging reciprocal concessions on tariffs. It was convened at United States initiative and was open to all GATT members, 35 of which participated in the negotiations. Concessions obtained and granted by the United States in 18 months of tariff bargaining were officially announced on March 7, 1962, by the U. S. Department of State.

The United States received duty concessions from other countries on fishery commodities with a United States export trade value of \$11.7 million in 1959, or 27 percent of the \$44.2 million of fishery products exported that year. On the other hand, the United States gave duty concessions with an import trade value of \$18,500,000 in 1959, or 5 percent of the \$366.5 million of fishery products imported. Since negotiations with several countries have not as yet been formally concluded, a few additional concessions (not included in this report) may ultimately change the total trade figures slightly.

Among the fishery products on which the United States granted duty reductions were frozen swordfish; wolffish or ocean catfish fillets; canned sardines skinned or boned valued over 30 cents per pound; canned anchovies; canned smoked oysters; pearl essence; and a number of pickled, salted, and smoked items, including groundfish, herring, and mackerel. As for the concessions obtained by the United States from other countries, the European Economic Community (EEC or Common Market) gave a binding of the free rate on menhaden oil, and a reduction of the duty rate on frozen salmon from 16 to 10 percent, on canned salmon from 20 to 18 percent, and on canned pilchards from 25 to 20 percent. Rates of the member countries of the Common Market will gradually adjust to these levels; complete adjustment is expected by about 1970. Canada gave a reduction from 10 to 5 percent on the duty rate of both fresh or frozen and canned shrimp, and the United Kingdom from 10 to 8 percent on canned tuna.

A full listing of the fishery items on which the United States granted or received tariff concessions is shown in table 1 and table 2. In addition other countries will reduce a number of their duties on imports of fishery products. United States exports of fishery products should benefit from these lower rates which resulted from negotiations between other GATT members. Details on these reductions are expected to become available soon.

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Table 1 - Principal Tariff Concessions Granted by the United States on Fishery Commodities at 1960-61 GATT Tariff Conference

Tariff Paragraph	Schedule A Statistical Class (1959)	Brief Description	Rate of Duty			Negotiated With	Country's 1959 Imports Into U. S. US\$1,000
			July 1, 1958	Geneva 1961 Agreement Intermediate	Final		
5	2260 260	Salts derived from vegetable oils, animal oils, fish oils, animal fats and greases, n.e.s. or from fatty acids thereof	12½%	11%	10%	United Kingdom	39
41	0941 700	Lingglass	21%	19%	17%	United Kingdom	39
52	0803 000	Whale oil, sperm: crude	1¢ gal.	0.75¢ gal	0.5¢ gal	Peru	803
52	0803 500	Whale oil, n.s.p.f.	2.5¢ gal.+ 1.25¢ per lb. IRC.	2.25¢ gal.+ 1.125¢ per lb. IRC.	2¢ gal.+ 1¢ per lb. IRC.	Norway	518
60	8722 000	Ambergris	10%	9%	8%	EEC	9
66	8420 270	Pearl essence	11%	10%	9%	Norway Japan	119 268
717(a)	0055 500	Fish, fresh or frozen, whole, or beheaded, or eviscerated, or both: Swordfish, frozen	1.5¢ per lb.	1¢ per lb.	0.75¢ per lb.	Japan Peru	650 102
717(b)	0060 450	Fish, fresh or frozen; filleted, skinned, boned, sliced, or divided, n.s.p.f.: Wolffish (sea catfish)	1.5¢ lb.	1.25¢ lb.	1¢ lb.	Norway	543
717(c)	0062 000	Fish, dried and unsalted: Cod, haddock, hake, pollock, and cusk	5/8¢ lb.	0.4¢ lb.	0.2¢ lb.	Norway	420
718(a)	0063 800 (part)	Fish, in oil or in oil and other substances: Sardines, skinned or boned, valued over 30¢ per pound ^{1/}	30%	27%	24%	Portugal	1,814
	0064 300	Anchovies, valued over 9¢ per pound ^{1/}	15%	13½%	12%	Portugal	1,863
	0066 200	Antipasto, valued not over 9¢ per pound ^{1/}	22%	20%	17½%	EEC	180
	0066 300	Antipasto, valued over 9¢ per pound ^{1/}	12½%	11%	10%	EEC	180
718(b)	0067 300	Fish, not in oil or in oil and other substances in airtight containers weighing, with contents, not over 15 pounds each: Fish cakes, balls and pudding	5%	4%	3%	Norway	9
	0067 600	Herring, smoked or kippered or in tomato sauce, packed in immediate containers weighing, with contents, more than 1 pound	10%	9%	8%	United Kingdom	230
719		Fish, pickled or salted (except in oil, etc., and except in airtight containers, weighing, with contents, not over 15 pounds each): Cod, haddock, hake, pollock, and cusk, neither skinned nor boned, etc.	0.5¢ lb.	0.35¢ lb.	0.2¢ lb.	Canada	2,636
(2)	0069 000	More than 43 percent moisture by weight	0.25¢ lb.	0.225¢ lb.	0.2¢ lb.	Canada	1,494
(3)	0069 200	More than 43 percent moisture by weight	0.25¢ lb.	0.225¢ lb.	0.2¢ lb.	Canada	2,008
(4)	0069 900	Cod, haddock, hake, pollock, and cusk, skinned or boned	1.25¢ lb.	1¢ lb.	0.75¢ lb.	Canada	2,008
	0070 100	Herring (include sprats, pilchards, and anchovies); in bulk or in containers, weighing, with contents, more than 15 pounds each: In containers containing each not more than 10 pounds of herring, net weight	3/8¢ per lb. net weight	0.25¢ per lb. net weight	0.1¢ per lb. net weight	EEC	219
	0070 400	In containers containing each more than 10 pounds of herring, net weight	0.25¢ per lb. net weight	0.18¢ per lb. net weight	0.1¢ per lb. net weight	Norway	1,809
	0072 000	Mackerel: In bulk or in containers weighing, with contents, more than 15 pounds	0.5¢ lb.	0.3¢ lb.	0.2¢ lb.	Norway	259
	0072 200	In containers (not airtight) weighing with contents not more than 15 pounds each	12½%	11%	10%	EEC	77
720(a)		Fish, smoked or kippered, not in oil, etc., and not in airtight containers weighing, with contents, 15 pounds or less each: Herring: Whole or beheaded, hard dry-smoked	5/16¢ lb.	0.2¢ lb.	0.1¢ lb.	Norway	130
(2)	0075 100	Eviscerated, split, skinned, or divided	1.25¢	1¢ lb.	0.9¢ lb.	Canada	62
(3)	0075 400	Cod, haddock, hake, pollock, and cusk: Whole, or beheaded, or eviscerated, or both	1¢ lb.	0.75¢ lb.	0.5¢ lb.	Canada	143
(4)	0075 500	Filletted, skinned, boned, sliced, or divided	1.5¢ lb.	1.25¢ lb.	1¢ lb.	Canada	336
(5)	0075 600	Fish paste and fish sauce	10%	9%	8%	EEC	23
721(c)	0078 500	Other fish roe for food purposes, boiled and packed in airtight containers	7½%	6½%	5½%	Norway	15
721(d)	0079 590	Smoked oysters in airtight containers	6¢ per lb.	5.4¢ per lb.	4.5¢ lb.	Japan	1,678
721(e)	0081 100 (part)	Marine glue pitch	1/	1/	1/	Japan	15
775	1250 210	Soups, soup rolls, soup tablets, or cubes, etc.	17½%	15½%	14%	EEC	2/
	1250 250	Pastes, balls, puddings, hash, and similar mixtures of vegetables, meats, or fish, n.s.p.f.	21%	19%	17%	Switzerland EEC	2/ 2/
1519(a)		Fur seal skins, dressed: Whole skins, not dyed	12½%	11%	10%	Norway	24
	0737 600	Tails, paws, pieces, etc., not dyed	12½%	11%	10%	Norway	-
	0737 620	Whole skins, dyed	15%	13½%	12%	Norway	12
	0737 625	Tails, paws, pieces, etc., dyed	15%	13½%	12%	Norway	-
1537(a)	0990 240	Whole bone manufacturers	12½%	11%	10%	EEC	-
1558	1190 800	Dog food unfit for human consumption: Other manufactured, n.s.p.f. etc.	10%	9%	8%	Canada	2/
	8850 550	Marine glue pitch	20%	18%	16%	United Kingdom	1

^{1/}Including weight of immediate container.^{2/}Fishery item not separately reported.

Abbreviations: "IRC" - Internal Revenue Code; "n.e.s." - not elsewhere specified; "n.s.p.f." - not specifically provided for; "EEC" - European Economic Community (Belgium, France, W. Germany, Italy, Luxembourg, and The Netherlands).

Table 2 - Principal Tariff Concessions Obtained by the United States on Fishery Commodities at 1960-61 GATT Tariff Conference

Country	Tariff Number	Brief Description	Rate of Duty		U. S. 1959 Exports to Negotiating Country
			Existing	Negotiated	
EEC	03.01 A ex 1	Salmon, fresh or frozen	16%	10%	US\$1,000
EEC	03.01 C	Fish livers and roes, fresh or frozen	14%	1/14%	268
EEC	03.02 A1 ex c	Salmon, whole, headless, or in pieces, salted	15%	12%	274
EEC	03.02 A11 ex b	Salmon fillets, salted	18%	16%	3/
EEC	03.02 ex B	Smoked salmon	16%	1/16%	7,066
EEC	15.04 ex B	Menhaden oil	free	1/free	466
EEC	16.04 B	Canned salmon	20%	19%	146
EEC	16.04 ex E	Canned pilchards	25%	20%	80
EEC	16.05 ex	Canned shrimp	20%	1/20%	-
EEC	16.05 ex	Canned squid	20%	1/20%	71
EEC	32.09 A1	Pearl essence	16%	1/16%	-
Austria	32.09	Pearl essence	28% but not less than 800 schillings per 100 kgs.	25% but not less than 700 schillings per 100 kgs.	15
Canada	130	Fresh or frozen shrimp	10%	5%	1,396
Canada	130	Canned shrimp	10%	5%	1,894
Portugal	16.05 ex	Canned squid	18 escudos per kg.	8 escudos per kg.	-
United Kingdom	05.13	Natural sponges	10%	8%	2/
United Kingdom	16.04 ex D	Canned tuna	10%	8%	-
United Kingdom	32.09 B2	Pearl essence	20%	15%	69
Switzerland	16.05.20	Canned shrimp	50 francs per 100 kgs.	40 francs per 100 kgs.	125

1/Rate bound (guaranteed) against increase.

2/Trade data not reported separately.

3/U. S. export data included in \$294,000 shown for first salted salmon item.

Note: Duty rates on items shown for EEC will not become fully effective until about 1970. In the meantime, individual duty rates of member countries of the EEC will gradually adjust to full rates. The EEC or "Common Market" includes the following countries: Belgium, France, W. Germany, Italy, Luxembourg, and the Netherlands.

BACKGROUND

The Tariff Act of 1930 established the basic rates of duties and the general rules to be applied to the importation of products into the United States. In 1934, Congress passed the Trade Agreements Act, authorizing the President to conclude trade agreements with other countries. In return for reductions by other countries in their restrictions on United States goods, the President was given authority to modify United States tariffs.

The Department of the Interior has participated in the development of trade agreements only since 1951. The President, by executive order, provided for Interior membership in the interdepartmental Trade Agreements Committee. At that time, duties on fishery products in most cases had already been reduced by 50 percent from their 1930 levels, and in some cases by as much as 75 percent.

The role of the Department of the Interior in the field of international trade was strengthened by the Fish and Wildlife Act of 1956. Among other things, the Act provided for representation at negotiating conferences and for authority to participate in the solution of foreign fishery trade problems. Within that framework, the Department has played a constructive role in representing the interests of the fishery industries in the implementation of the Government's foreign trade policies.

The tenth renewal of the President's authority to negotiate changes in duties under the Tariff Act of 1930 was passed by the Congress in 1958. The authorization granted extends to June 30, 1962. The President was given authority to reduce United States duties either (1) by not more than 20 percent; or (2) by not more than 2 percentage points in ad valorem rates or its equivalent in the case of specific duties; or (3) to 50 percent ad valorem, or its equivalent in the case of specific duties. During the 1960-61 negotiations, the bulk of reductions were in the "not more than 20 percent" category, although the other alternatives were also used where appropriate.

Public notices concerning United States intention to participate in the 1960-61 negotiations were issued on May 27, 1960, and November 22, 1960. Attached to each notice was a list of the products under consideration for a possible concession. The notices provided for the submission of written briefs and the holding of public hearings. Interested parties were given the opportunity to present their views to the appropriate Government bodies concerning the desirability of granting concessions on listed products. In addition, each notice solicited

ited the views of interested parties on the desirability of seeking concessions in the tariffs of other countries.

The GATT negotiations in Geneva were conducted in two phases. In the first phase, the United States and other GATT members negotiated with the European Economic Community to achieve a set of concessions in the common external tariff of the EEC which would match, in trade coverage and duty level, previous concessions in the separate tariffs of the EEC countries (Belgium, France, West Germany, Italy, Luxembourg, and the Netherlands).

The Treaty of Rome which established the European Common Market provides that the tariffs for the member states shall be gradually replaced by a common external tariff (CXT). Article XXIV:6 of the GATT states that the new external tariff of any customs union shall not be higher, on the whole, than the general incidence of the duties applied by constituent members before the union was formed.

The United States and other GATT members reviewed the individual CXT items with the European Economic Community to ascertain that their proposals were in conformity with GATT rules. For example, in the individual EEC countries, the original national duty rates on canned pilchards were 20 percent in the Benelux countries (Belgium, Netherlands, and Luxembourg), 25 percent in France and West Germany, and 30 percent in Italy. The original proposed rate for the common external tariff of the EEC was 25 percent ad valorem. The United States made a case for a lower rate and the EEC acquiesced with a new rate of 20 percent ad valorem.

In the second phase of the negotiations, the United States, EEC, and other participating GATT countries exchanged tariff concessions with one another. A member could meet in separate negotiations with any member which so agreed. The United States negotiated with the EEC, the United Kingdom, Japan, Norway, Portugal, and a number of other countries. The concessions exchanged by any two members in such separate negotiations also apply to imports from all GATT members.

The negotiation conducted between the United States and the United Kingdom illustrates this bilateral approach. Concessions were exchanged on a list of commodities with a total trade value of nearly \$200 million in 1959. On the lists of concessions which were exchanged were duty reductions on canned tuna by the United Kingdom and on canned herring by the United States. These lower rates of duty will apply equally to imports from any other GATT countries.

During the conference, negotiations were also conducted among GATT countries in cases where previous concessions granted by a member had been withdrawn. In such cases, the affected countries would renegotiate and try to agree on satisfactory compensatory concessions for the withdrawn item. Negotiations were also held with several countries, including Portugal, which desired to become members of the GATT.

The agreements reached during the negotiations are scheduled to be put into effect on the part of the United States by Presidential Proclamation. Under the terms of the agreements, however, the date on which the reductions come into force is left for subsequent determination. It is expected that members will mutually agree to apply the new duty rates on July 1, 1962.

The United States reductions are to be staged generally in the minimum period authorized. Where the reduction is to be not more than 20 percent or 2 percentage points, the duty will be cut in two stages, each by one-half of the amount, one year apart. The first cut in duty rates is expected to become effective around July this year.

The reductions in duties granted by the EEC are in terms of the common external tariff which will become fully applicable about 1970. During the interim period, the individual national external tariffs of each member country will move gradually toward the final rate. This means that the tariffs of the individual EEC countries will be either increasing or de-

creasing as those countries either bring their present tariffs up or down to the announced Common Market external tariff.

Reductions in duties granted by non-EEC countries to the United States are expected to be put into effect for the most part in one stage, that is, into full effect this year.

TARIFF CONCESSIONS GRANTED BY THE UNITED STATES

During the second phase of the negotiations, the United States granted tariff concessions on fishery products to a number of countries. A concession was usually made to the country or countries that had contributed the major share of the United States imports of a particular product. Many of the duty rates which will be reduced by the United States were already at a low level.

CANADA: The United States granted Canada concessions on fishery products which have a larger total dollar value than the total value in concessions given to any other country. Most of the duty reductions granted to Canada were on various types of pickled, salted, dried, or smoked groundfish (cod, haddock, hake, and cusk). The concessions will further reduce the present low United States duty rates on those products.

NORWAY: Concessions were granted Norway on a variety of fishery products. Reduced rates of duty were given on wolffish or ocean catfish fillets; fish cakes, balls, and pudding; and on certain pickled and salted herring and mackerel items.

PERU: Concessions were granted to Peru on crude sperm whale oil and on frozen swordfish. The whale oil concession was also granted to Norway and the swordfish concession to Japan. In 1959, Peru supplied United States whale oil imports valued at \$802,995, and Norway \$518,129 worth. Peru supplied United States frozen swordfish imports valued at \$101,576, and Japan \$649,595 worth.

EUROPEAN ECONOMIC COMMUNITY: The EEC received concessions on certain pickled and salted herring and mackerel, canned antipasto, and several other items.

JAPAN: In addition to several fishery concessions shared with other countries, Japan obtained a duty reduction on canned smoked oysters.

UNITED KINGDOM: The concession on certain canned herring granted to the United Kingdom includes the well-known British product "Marshall Herring."

PORTUGAL: The United States, in negotiations with Portugal, granted reductions in the duties on canned sardines, skinned or boned and valued over 30 cents per pound, and on canned anchovies.

TARIFF CONCESSIONS OBTAINED BY THE UNITED STATES

During the negotiations the United States obtained direct concessions from other countries on a number of fishery products. Exports of United States menhaden oil and shrimp should benefit most from the concessions received.

EUROPEAN ECONOMIC COMMUNITY: Concessions were obtained from the EEC in both phases of the conference. During the first phase, the United States obtained a free binding on menhaden oil. This binding specifically guarantees to the United States a free duty on menhaden oil. Since menhaden oil is currently the principal United States fishery product exported, and the EEC is the principal market, the concession has considerable importance. Reduced duty rates were obtained on canned salmon, frozen salmon, and canned pilchards. Rates were bound (guaranteed) on canned shrimp and canned squid. During the second phase, the EEC granted reductions on cured salmon products.

CANADA: The Canadian duty rate on both fresh or frozen and canned shrimp was reduced from 10 percent to 5 percent ad valorem. In 1959, United States exports of shrimp to Canada were valued at \$3,289,592.

UNITED KINGDOM: The United States obtained a reduction from 10 to 8 percent ad valorem in the United Kingdom duty on canned tuna. In addition the United Kingdom granted reductions on natural sponges and pearl essence.

OTHER COUNTRIES: Switzerland granted a duty reduction on canned shrimp, and Austria on pearl essence. Portugal granted a reduction in the duty on canned squid to less than one-third of the existing rate.



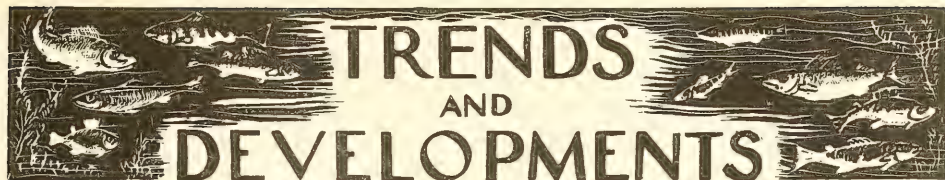
PACIFIC SALMON CAUGHT IN SCOTTISH WATERS

An unusual fish was caught in a bag-net at the Altens salmon fishing station on the Kincardineshire coast just south of Aberdeen, Scotland, on July 16, 1960. It was identified as *Oncorhynchus gorboscha* (Walbaum), the pink or humpback salmon, of which the natural distribution is along the Pacific coast of North America and Asia from the Bering Straits to the Sacramento River and Peter the Great Bay.

The fish caught at Altens was 20.5 inches long over-all with a girth of $13\frac{1}{4}$ inches, and it weighed 4 lbs. 2 oz. This species is at once distinguishable from either the Atlantic salmon or the sea trout by its deeper body, its more pointed snout, and the presence of coarse oval black spots on the tail. Its color is a bright blue and its scales are very small and even more delicate than those which commonly occur on the earliest grilse of the season. Dissection showed that the fish was a male with enlarged testes though the kype and hump that develop at the spawning period were not evident.

The pink or humpback is one of the six species of the genus *Oncorhynchus* which are commonly known as the "Pacific salmon." They spend part of their life in the sea and part in the streams where they spawn and die. Unlike Atlantic salmon, pink salmon all spawn as two-year-old fish and all die after spawning. The adult salmon migrate from the sea to the streams during the summer and early autumn and spawn in the lower reaches of the rivers. When the eggs hatch in the spring the tiny fish are already silvery without the spots and parr marks of the Atlantic salmon fry, and go straight to salt water so that nearly the whole two years' life-span is spent in salt-water feeding and growing rapidly. Most pinks weigh 4 or 5 pounds though a few weigh as much as 10 pounds. They are caught commercially by gill-netting, purse-seining, and trolling.

Since 1956 the Russians have transferred very large numbers of Pacific salmon eggs, chiefly pink salmon, from Sakhalin Island north of Japan to the rivers of the Kola peninsula. Up to the middle of September 1960, they have had records of the return of some 75,000 fish to the rivers of the Kola peninsula. There have also been reports of recaptures on the Norwegian coast, chiefly in the north but extending as far south as Bergen, and in Iceland. Several thousand Pacific salmon have been caught on the Norwegian coast but in Iceland the catches have been much smaller--probably less than 50 altogether. It is, therefore, reasonable to assume that the pink salmon caught at Altens originated from one of the rivers of the Kola peninsula. (Scottish Fisheries Bulletin--No. 14, March 1961.)



TRENDS AND DEVELOPMENTS

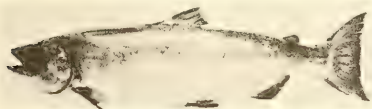
California

MIDWATER TRAWLING FOR SALMON FINGERLINGS CONTINUED:

M/V "Nautilus" Cruise 62-N-1c and 62-N-1d-Salmon: Midwater trawl operations in the Carquinez Strait area to capture marked salmon fingerlings on their seaward migration were continued by the California Department of Fish and Game research vessel Nautilus (February 4-8, 18-22, 1962). A nylon midwater trawl with 25-foot square opening was used.

Trawling in Carquinez Strait was conducted between 8 a.m. and 3 p.m. and each tow was for 20 minutes. All tows were alternated between upstream and downstream, and between the north shore, center, and south shore of the channel.

A total of 95 tows was completed in the Strait during this cruise yielding a catch of 92 wild king salmon (Oncorhynchus tshawytscha).



King salmon
(Oncorhynchus tshawytscha)

Other species appearing in the catch in significant quantities consisted mostly of Sacramento smelt (Spirinchus thaleichthys) 1,984 fish, striped bass (Roccus saxatilis) 1,923 fish, surf smelt (Hypomesus pretiosus) 1,127 fish, northern anchovy (Engraulis mordax) 1,065 fish, American shad (Alosa sapidissima) 362 fish, Pacific herring (Clupea pallasii) 169 fish, three-spined stickleback (Gasterosteus aculeatus) 104 fish, and king salmon (Oncorhynchus tshawytscha) 92 fish.

M/V "Nautilus" Cruise 62-N-1e and 62-N-1f Salmon: Midwater trawling for salmon fingerlings in the Carquinez Strait area was continued (March 6-9, 18-22, 1962) by the Department's research vessel Nautilus.

Trawling was conducted between 8 a.m. and 3 p.m. and each tow was for 20 minutes. All tows were alternated between upstream and downstream, and between the north shore, center, and south shore of the channel.

A total of 98 tows completed in the Strait during this cruise yielded a total catch of 112 king salmon (Oncorhynchus tshawytscha). Three of these fish were mark recoveries: 2 from a release in the American River on January 5, 1962, and 1 from releases in San Pablo Bay made after March 8, 1962.

Other species appearing in the catch in significant quantities consisted mostly of Pacific herring (Clupea pallasii) 5,033 fish, Sacramento smelt (Spirinchus thaleichthys) 2,798 fish, striped bass (Roccus saxatilis) 1,890 fish, American shad (Alosa sapidissima) 520 fish, northern anchovy (Engraulis mordax) 201 fish, surf smelt (Hypomesus pretiosus) 170 fish, splittail (Pogonichthys macrolepidotus) 119 fish, king salmon (Oncorhynchus tshawytscha) 112 fish, and white croaker (Genyonemus lineatus) 103 fish.

Note: See Commercial Fisheries Review, April 1962 p. 12.



Central Pacific Fisheries Investigations

TUNA BLOOD TYPES BEING STUDIED FOR SUBPOPULATION IDENTIFICATION:

In the past ten years blood typing techniques utilized for humans, and later domestic animals, have found increasing application to the problem of subpopulation identification in fish. This is because blood or serological characters are deemed to be under regular genetic control and hence

free from modification due to the environment of the animal.

The staff of the Subpopulations Program at the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu has been developing blood-typing reagents for four species of tuna: the albacore, big-eyed, skipjack, and yellowfin. By application of sophisticated techniques, tests have been developed with these reagents that will detect different and discrete blood systems within the tuna. The ultimate application of these techniques is to use them on large samples of bloods from different areas to ascertain the frequency of occurrence of the various blood systems. If the frequencies in samples from one area differ statistically from those of another area, it may be assumed that two genetically different and reproductively isolated populations have been sampled.

This aim was realized for skipjack tuna during a cruise of the Bureau's research vessel Charles H. Gilbert in waters around the Marquesas, Tuamotu, and Society Islands. During the period from September 29 to December 4, 1961, blood samples from 780 skipjack caught in those waters were tested.

Comparison of the data from those tests and similar tests with the same reagents run against skipjack taken in local Hawaiian waters, shows the occurrence of 2 of the 6 phenotypes in the Marquesan skipjack to be very different from the frequency of occurrence of the same two phenotypes in all the other areas sampled.

From such comparisons we are able to conclude that in the areas sampled reproductive isolation exists and that at least two genetically different subpopulations have been sampled.

* * * * *

TUNA STUDIES IN SOUTH PACIFIC CONTINUED BY M/V "CHARLES H. GILBERT":

Cruise 55 (January 15-April 3, 1962): The South Pacific Ocean, in area bounded by latitude 5° and 25° S., longitudes 167° E. and 160° W. (waters of New Caledonia, Fiji, Ellice Islands, Tonga, and Samoa) and waters adjacent to Christmas Island, was where the U. S. Bureau of Commercial Fisheries research vessel Charles H. Gilbert operated for almost three months this year. The ves-

sel departed Honolulu, Hawaii, on January 15, 1962. The vessel fished long line, made plankton net tows and midwater hauls in selected areas on initial leg of cruise to Noumea, New Caledonia, from January 16 to February 4. At Noumea, vessel scientific staff consulted with scientists of the Institut Français d'Océanie on the cooperative cruise of the Orsom III. Resumed cruise southeastward to $172^{\circ} 30' \text{ E.}$, thence northeast to Suva, Fiji, from February 9 to February 16. Loaded additional bait at Suva and resumed cruise northeastward to $10^{\circ} 43' \text{ S.}$, $178^{\circ} 46' \text{ E.}$, from February 20 to February 25. Continued cruise on southeast leg to Nuku'alofa, Tongatapu Island, Tonga, from February 25 to March 3. Resumed cruise to Pago Pago, American Samoa, from March 9 to March 15. Refueled and loaded additional bait at Pago Pago. Made bait survey on island of Tutuila on March 16 and 18. Resumed cruise from Pago Pago to vicinity of Christmas Island from March 19 to March 28, and fished two long-line stations on March 28 and 29. The vessel returned to Honolulu on April 3.

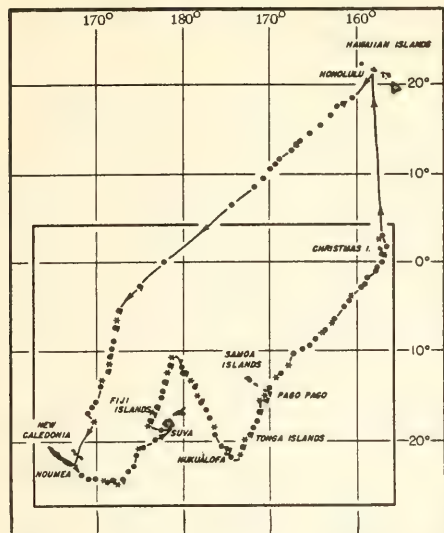
One of the objectives was to assess the sexual maturity of long line-caught albacore in the general area of New Caledonia, Fiji, Tonga, and Samoa in order to define the spawning of the South Pacific albacore. The 22 long-line stations fished within that area produced 49 albacore, 36 yellowfin, 14 big-eyed tuna, 3 skipjack, 17 spearfishes, 46 sharks, and 51 miscellaneous fishes. The albacore, 16 females, 32 males, and 1 unsexed, were generally large adults; the smallest measured 87 cm. Fifty percent of the females had spent ovaries and the other 50 percent had ovaries that were either immature or in the early stages of development. None had ripe or near-ripe ovaries, indicating that the fish had already spawned.

A second objective was to collect blood and serum samples from tunas, marlins,



Collecting tuna blood sample.

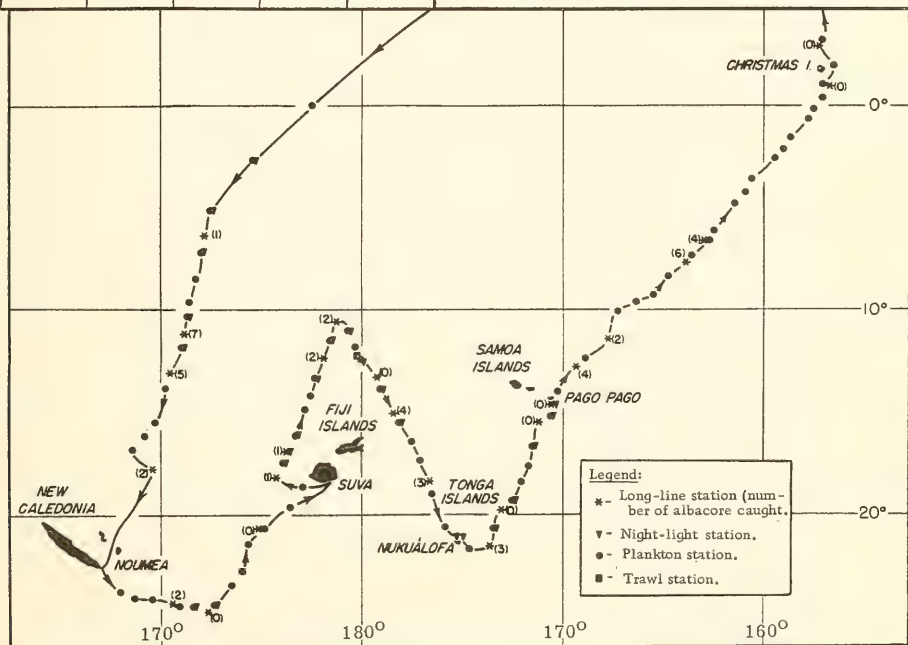
and sharks for serological studies. Blood samples were collected from albacore, yellowfin, big-eyed, and skipjack tuna, blue marlin, sailfish, and short-nosed spearfish. In addition to those species, blood samples were obtained from dolphin, barracuda,



and wahoo. Blood serum samples were taken from all the above species as well as from great blue, white-tip, and silky sharks.

To collect larval and juvenile forms of tunas and tuna-like fish by plankton tows, trawl hauls, and night-light fishing was a third objective. A total of 127 surface and 140-meter oblique plankton tows, 2 mid-water trawl hauls, and 26 night-light collections were made in order to obtain larval and juvenile tunas. Gross examination of plankton samples at sea indicated that few larval tuna were taken by the plankton nets. No tuna or tuna-like juvenile was taken either in the trawl or by night-light fishing.

To attempt artificial fertilization and shipboard rearing of larval and juvenile scombrids was a fourth objective of the cruise. In the absence of running-ripe tuna eggs, an attempt was made to fertilize artificially big-eyed eggs in the most advanced stage of development found. The eggs were transparent and measured up to 0.9 mm. in diameter. However, the attempt was unsuccessful.



Charles H. Gilbert Cruise 55 (Jan. 15-Apr. 3, 1962).

cessful, probably owing to lack of sufficient milt and insufficient maturity of the eggs.

In order to capture young tuna alive in the plankton net, a plastic cylinder 17 inches long and $3\frac{1}{4}$ inches in diameter, containing twelve $\frac{3}{4}$ -inch holes in the anterior half, was used at the cod end, instead of the usual sock made of nylon netting. The plastic cod end was used on nearly all of the surface tows. Although no young tuna was taken, it was shown that this device could catch small fish and hold them alive until they were transferred to the aquarium.

In the absence of young tuna for shipboard rearing, the young of other species of fish taken at night-light stations were used in order to test the design and capability of the aquarium. Keeping the more pelagic forms, such as dolphin and marlin, alive for any length of time was not possible, because they did not learn to feed upon the food offered them. Young holocentrids and goatfish, however, fared very well.

To tag and release viable albacore was a fifth objective. Owing to the small numbers of albacore taken on the long line and the premium placed on data for serological and ovarian studies, no albacore were tagged. However, approximately 25 percent of the albacore landed during the cruise were considered to be viable.

During the cruise tuna and shark specimens were collected; drift bottles were released at regular intervals between Hawaii and latitude 5° S, en route to and from the survey area. Total bottles released: 1,680; yellowfin sperm samples were collected for the Inter-American Tropical Tuna Commission; stomach contents of 84 fish, and gonad samples of 3 albacore and 2 big-eyed tuna were preserved in 10-percent formalin.

In addition, during the cruise the thermograph and barograph were operated continuously; weather observations, totaling 218, were made four times daily and transmitted to the Weather Bureau; bathythermograph casts (245) were made and a surface salinity sample was obtained with each BT cast; two lures were trolled during daylight hours at cruising speed (the catch comprised 1 skipjack, 3 yellowfin, 4 dolphin, and 1 wahoo); and 124 surface fish schools and bird flocks were sighted, 65 of them within the survey area (of the latter,

13 were identified as skipjack, and 52 were unidentified).

During the stopover at Pago Pago, a bait survey was conducted around the island of Tutuila.

An albacore sampling program was established at the cannery in American Samoa with the cooperation of the Department of Agriculture, Government of American Samoa, and the tuna company. The sampling will consist of measuring the length and weight and determining the sex of 50 randomly-selected albacore from each load brought to the cannery by Japanese long-liners.

Note: See Commercial Fisheries Review, February 1962 p. 16.



Columbia River

SALMON TEST FISHING IN COLUMBIA RIVER:

"How many spring chinook will move up the Columbia this year? When will the peak of the run occur?" These are among the questions Oregon Fish Commission biologists and their counterparts in the Washington Department of Fisheries are seeking to answer as the two agencies started the fourth year of cooperative test fishing in the Columbia River. Data obtained will help answer these and many other questions bearing on the proper management of the Columbia River anadromous fishery resource.

Oregon started the test fishing on March 15 and Washington on March 27. It consists of a run-sampling gill-netting program designed to gather information on which will be based the commercial seasons in the Columbia River. Oregon technicians fished in the vicinity of Woody Island, some 15 miles upriver from Astoria, and the Washington technicians fished in the Corbett area, below Bonneville Dam. Fishing continued every other day until late April.

The Oregon Fish Commission contracted with an Astoria commercial fisherman to provide the vessel and gear and to conduct the actual fishing operations under supervision on the Agency's Lower Columbia River technical staff. Salmon taken in the nets were marked with a plastic dart-type tag and released.

Washington used a circular plastic tag, the so-called Peterson-disc type, to mark fish taken in their Corbett area netting. Fishermen can render a service to conservation if they will inform the appropriate state agency of the date and location of any tagged fish taken.



Peterson-disc type tag.

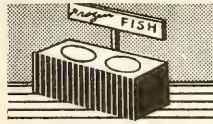
Spring chinook salmon of the Willamette River stock, for the most part, pass up the Columbia into the Willamette before the commercial season opens. However, a considerable fluctuation in fish runs necessitates a continuing program of sampling so that fishery biologists remain current on any significant changes. "The information gained from test fishing operations represents a big return on a small investment," according to the Director of Research of the Oregon Fish Commission.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-MARCH 1962:

Fresh and Frozen: For the use of the Armed Forces under the Department of Defense, a greater amount of fresh and frozen fishery products was purchased in March 1962 by the Military Subsistence Supply Agency than in the previous month--the quantity purchased was up by 78.9 percent



and the value of the purchases was up 36.5 percent. This shows that lower-priced fishery products were purchased in March than in February because the value did not increase in the same proportion as the quantity. Compared with the same month a year earlier, purchases in March 1962 were up 24.2 percent in quantity but the value was up 54.6 percent. This shows that in March this year some of the purchases consisted of higher-priced products than in the same month of 1961.

During the first three months of 1962, purchases were down 7.3 percent in quantity, but the value of those purchases was up

12.8 percent as compared with the same period of 1961. Again this shows that purchases in the first quarter of 1962 consisted of some higher-priced products than was the case in the same period of 1961.

Prices paid for fresh and frozen fishery products by the Department of Defense in March 1962 averaged 55.6 cents a pound, 17.3 cents a pound less than the previous month, but 10.9 cents a pound more than in the same month of 1961.



Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, March 1962 with Comparisons

QUANTITY						VALUE					
March			Jan.-Mar.			March			Jan.-Mar.		
1962	1961	1962	1961	1962	1961	1962	1961	1962	1961	1962	1961
..... (1,000 Lbs.) .....						..... (\$1,000)					
1,948	1,568	4,788	5,167	1,084	701	2,874	2,547				

Canned: A substantial amount of canned salmon was purchased in March this year for the use of the Armed Forces. For the first quarter of this year purchases of canned tuna and canned salmon were substantially greater than in the same period of 1961, but purchases of canned sardines were down. The decline in the purchases of canned sardines was no doubt due to the short packs of both Maine and California sardines during the 1961 season.



Table 2 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, March 1962 with Comparisons

Product	QUANTITY				VALUE			
	March	Jan.-Mar.	1962	1961	March	Jan.-Mar.	1962	1961
	1962	1961	1962	1961	1962	1961	1962	1961
..... (1,000 Lbs.)								
Tuna ..	-	3,113	1,365	-	-	1,739	603	
Salmon ..	1,015	-	-	638	-	638	-	
Sardine ..	3	24	10	60	2	12	6	29

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than shown because local purchases are not obtainable.

CORRECTION: Under this section on p. 17 of the May 1962 issue, the second paragraph should have read: "Prices paid for fresh and frozen fishery products by the Department of Defense in February 1962 averaged 72.9 cents a pound, about 16.0 cents more than paid . . ."



Gear

CONSTRUCTION OF A FISH WEIR:

A weir is a type of fixed entrapment gear. It consists of fences of brush or other non-textile materials constructed so as to intercept schools of feeding or migrating fish. These fences form successive enclosures (the heart, pound or bowl, and pocket) into which the fish are voluntarily directed by a fence (the leader). A weir is generally built each year in the same location since it is permanently fixed to the bottom. Fish are removed from weirs by seines or other devices.

Weirs are a popular means of fishing for sardines in Maine. But they are also used to catch other types of fish.

The photographs in this article show the building of an inshore fish weir at Barnstable Harbor, Mass.

The fish weir in this particular location was first erected in 1886 by Benjamin Lovell, the same year his grandson and present owner, Shirley D. Lovell, was born. It is put up in the early spring inside Barnstable Harbor near the Sandy Neck lighthouse, and is taken down in the late fall.

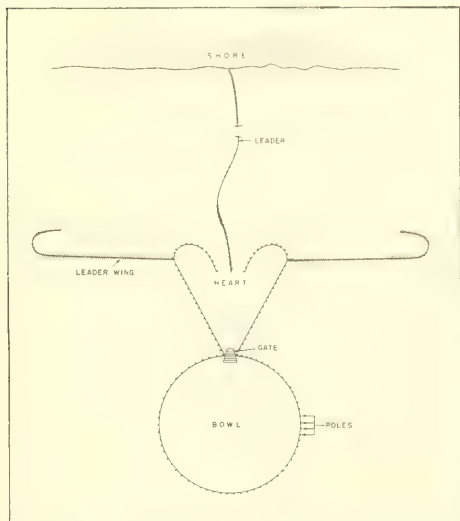


Fig. 1 - A sketch showing the layout and construction of a typical fish weir.

Large and small herring and sand lance are the first fish to be taken from this weir, followed later in the season by flounders, striped bass, menhaden, squid, and mackerel. The unwanted dogfish is usually heavily abundant during the latter part of the season.

Many species of Southern fish find their way to the trap, in large and small schools. These include jacks, dolphins, leather jackets, bonito, needlefish and, for some years now, one or two Atlantic salmon.



Fig. 2 - Putting in small trees for the shore leader. Using a water jet, driven by a small gasoline-powered pump on the skiff at left, a hole is dug 4 feet deep in the sand and the trees inserted 2 feet apart.



Fig. 3 - Setting one of the heart poles. Water temperature during this early spring operation averages 35-39 degrees F. Summer temperatures will go up into the 70's.



Fig. 4 - Tying line to the net that forms the bowl. The net is then raised to a height of about 20-feet. The wider mesh (top, right) is out of water at high tide. The bowl is hung first, followed by the heart. Leaders and the flaking are set as time and low tide permit. Last step is the building of the gate.



Fig. 5 - Setting the flaking inside the bowl.



Fig. 6 - Raising the twine that forms the heart from the flaking to the top of the poles. Work on the weir is done at low tide which usually lasts no longer than 2 hours. Barnstable Harbor has a 9- to 12-foot tide.



Fig. 7 - Tying wire to the shore leader. Collecting debris during the change of tide, the leader becomes a barrier directing the fish towards the bowl.



Fig. 8 - Building the ramp for the bottom of the gate.



Fig. 9 - The seine net is set out inside the bowl.



Fig. 10 - A mixed catch in the seine. Pictured is the 1-inch size mesh used for the larger fish such as flounder and striped bass. A $\frac{1}{2}$ -inch mesh is used for the smaller sand lance and herring.



Fig. 11 - Railing striped bass from the seine to the skiff. One side of the bowl has been lowered and tied to the stern of the skiff.

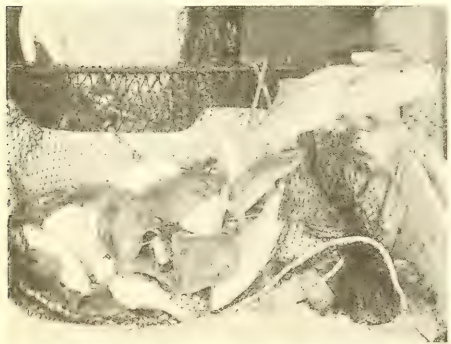


Fig. 12 - A mixed catch made by a weir.



Fig. 13 - Unloading a mixed catch of striped bass, flounder, and menhaden at the wharf.

-Robert K. Brigham, Photographer,
Biological Laboratory,
U. S. Bureau of Commercial Fisheries,
Woods Hole, Mass.

* * * * *

PATENTS ISSUED FOR NEW TRAWL DOOR AND NET FLOAT:

U. S. patents have been issued for a new type trawl door and a new type float for fishing nets, according to the April 1962 issue of Products List Circular, U. S. Small Business Administration, Washington, D. C.

The inventor claims the trawl door (Patent No. 3,007,274) is designed to keep the wings of the trawl net open and to maintain itself in a stabilized position at all fishing depths, also to reduce friction and drag as it is towed through the water, thus reducing power to tow; and is a hollow "turtle-back" shape having openings therein for permitting the water to flow through as the net is towed. That the interior of the hollow door is further provided with stabilizing plates having openings therein which tend to maintain the door on even keel. That the trawl door is hollow and open to the surrounding water and operates

efficiently at any depth because it partakes the same density.

The inventor claims the float (Patent No. 3,007,273) is designed to maintain a high opening of the net at normal trawling speeds and to reduce to a minimum the required towing power for dragging the net along the bottom in deep water. That the float tends to lift the net higher when the speed is increased, thus enabling more fish to be caught.

The inventor of both is G. K. Eggertsson of Winthrop, Mass.



Florida

FIRM INCREASES PRODUCTION OF CLAMS:

The President of a Placida, Fla., oyster firm reported on April 26, 1962, that it had shipped more clams out of Florida during March and April than were produced in the entire State in the previous two-year period (1960-1961). He said that the amount shipped does not even scratch the surface as far as the firm's production is concerned.

Florida's Director of Research stated that the supply of clams in Florida has not been exploited since World War II. He said that the State has almost unlimited stock and that new methods of cultivation along with a more rapid growth rate in Florida could easily make the State the number one clam-producing area of the world. Research of hatchery management and cultivation point to a great future for the clam industry.

The Director of the State's Board of Conservation added that with the knowledge of the clam stock, a stepped-up marketing program for the seafood will be started. He said that every effort is being made to increase the retail sales volume of Florida fishery products.



Georgia

FISHERY LANDINGS, 1961:

Total landings of fish and shellfish at Georgia ports in 1961 amounted to 20.5 million pounds--7.4 million pounds or 27 per-

cent below 1960. The greatest drop occurred in the shrimp fishery with only 6.8 million pounds (heads-on) or 65 percent of the previous year's catch. The poor shrimp season and resulting decrease in fishing pressure brought about a general decline in landings of all finfish caught incidental to shrimp fishing.

The winter of 1961 was cold and wet with temperatures below normal during January and early February. Oyster-shucking plants were not constructed to operate in extremely cold weather and operations were curtailed during the coldest days.

Shrimp landings (4.1 million pounds, heads-off) were the lowest recorded since 1952, and were 2.1 million pounds below 1960. However, the ex-vessel price was only \$204,000 less than in 1960 and averaged 58.5 cents per pound (heads-off) as compared with 41.6 cents received in 1960.



Catch of blue crabs made by a Georgia trawler.

The catch of hard crabs was the third best year on record with landings of 12.3 million pounds--a decrease of 3.5 million pounds compared with the record year 1960. This decrease is believed to be the result of reduced fishing effort due to a drop in demand rather than the non-availability of crabs.

The third best shad season since 1929 was experienced by the fishermen with landings of 404,000 pounds. Compared with 1960, this was a drop of 129,000 pounds. There was a decrease in the number of fishermen operating in the coastal rivers as high waters discouraged fishing activities.

Oyster production declined from 231,000 pounds of meats in 1960 to 158,000 pounds in 1961. Only four previous years (1938, 1956, 1957, and 1958) had a lower production. No oysters were canned by Georgia firms during 1961.



Great Lakes Fisheries

Exploration and Gear Research

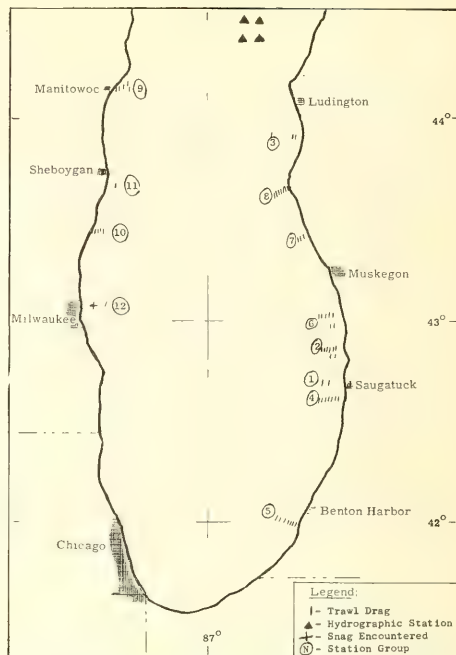
EXPLORATORY FISHING OPERATIONS IN SOUTHERN LAKE MICHIGAN:

M/V "Kaho" Cruise 1: The new 65-foot Great Lakes exploratory fishing and gear research vessel Kaho of the U. S. Bureau of Commercial Fisheries completed its first cruise of the 1962 season on April 18, 1962, after conducting exploratory fishing operations in southern Lake Michigan during the months of February, March, and April. The objectives of the three-phase cruise were to determine the bathymetric and seasonal distribution of various fish stocks and the availability of the fish species to standard Gulf of Mexico-type fish trawls. Unusually severe ice conditions hampered early cruise efforts.

A total of 57 drags were completed in various depths ranging from 9 to 45 fathoms. Best catches of chubs (*Leucichthys* sp.) were made off Port Washington in 19 to 41 fathoms of water where catch rates ranged from 42 to 918 pounds per hour. Significant catches of chubs were obtained as follows: 180-380 pounds per hour in 25-40 fathoms off Benton Harbor; 200-472 pounds per hour in 20-40 fathoms off Ludington; and 610-724 pounds per hour in 35-40 fathoms off Manitowoc. Smelt (*Osmerus mordax*) were caught in amounts of 350 pounds and 459 pounds per half-hour drag at 30 fathoms off Manitowoc and 20 fathoms off Port Washington, respectively. Although other species were caught, none were taken in amounts greater than 100 pounds per trawl tow.

A standard 50-ft. (headrope) Gulf of Mexico-type trawl net was used for all drags. Of the several door types fished, 7' x 30" bracket-rigged doors with 60-ft. dandyline gear were most satisfactory. Gear damage occurred only off Milwaukee at 20 fathoms.

In cooperation with the U. S. Department of Health, Education, and Welfare's Public Health Service, bathythermograph (BT) rec-



Lake Michigan explorations M/V *Kaho* Cruise 1 (February 20-April 18, 1962).

ordings were obtained from the deepest area of Lake Michigan off Frankfort, Mich., on two occasions. The BT temperature profiles are being used in a study of conditions affecting the extent and distribution of domestic and industrial waste. This information will also be used in Bureau studies to determine the influence of these conditions on reproduction, growth, and distribution of commercial species of fish.

Samples of the bloater chub (*L. hoyi*) were collected for analysis of feeding habits by the Bureau's Biological Laboratory in Ann Arbor.

Note: See Commercial Fisheries Review, Jan. 1962 p. 17.

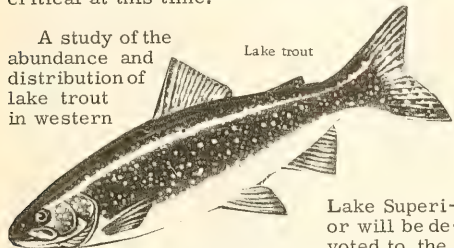


Great Lakes Fishery Investigations

RESEARCH VESSEL "SISCOWET" PROGRAM FOR 1962:

During 1962 the U. S. Bureau of Commercial Fisheries research vessel Siscowet will be used almost entirely in studies of young lake trout in Lake Superior. The special emphasis on lake trout was brought about by encouraging signs of reduction in sea lamprey predation and the increased survival of legal-size fish shown by the 1961 commercial catch. The need to follow closely changes in the lake trout population is considered most critical at this time.

A study of the abundance and distribution of lake trout in western



Lake trout

Lake Superior will be devoted to the annual assessment of spawning populations of lake trout in the Apostle Islands region. Information will be gathered on the success of various stocking experiments, the survival of plantings made in recent years, the abundance of native lake trout in the juvenile population, and the seasonal distribution of the young trout. Other trawls and experimental gill nets will be used to collect the data.

During the environmental studies at pre-selected limnological stations, special emphasis will be placed on the environmental requirements of young trout.

Data will be collected in Keweenaw Bay and at Isle Royale on the contribution of hatchery-reared lake trout to the native population and on the relative abundance of lake trout as compared to previous years.

Other operations will be devoted to the collection of material on the life history of whitefish and various aspects of the life history and distribution of various coregonids (whitefish species).

LAKE MICHIGAN FISHERY SURVEY FOR 1962 SEASON:

The main objective in 1962 of the U. S. Bureau of Commercial fisheries research

vessel Cisco will be to study the early life history of chubs. The Cisco will operate in Lake Michigan with Saugatuck, Mich., as home port. Few chubs have been collected as fry or fingerlings in the past, mostly because relatively little fishing has been done at midwater levels, where the young chubs live. Emphasis this year will be on midwater fishing with trawls, large-mesh plankton nets, and possibly small-mesh gill nets.

A second objective will be to study fish distribution in the area where the thermocline touches the lake bottom--generally at depths of 10 to 15 fathoms in Lake Michigan. Past experience has shown that catches may differ widely with little change in depth in that zone, probably because the temperature changes are so great. Studies in this area should yield information on temperature preferences of fish of the various segments of the population.

Material for the serological study of chubs, which is being conducted by a graduate student at the University of Michigan, will be collected during each cruise. Preliminary processing of some of the material will be done on the Cisco. The Laboratory's primary interest in the study is in the possible development of a more positive method for the identification of the various species of chubs.

The Bureau has entered into an agreement with the U. S. Public Health Service (PHS) for the use of the Cisco for collection of limnological data in Lake Michigan for two 15-day cruises during the spring. The Cisco's regular vessel crew will be used, but the PHS will furnish the scientific staff. One or two staff members of the Bureau's Ann Arbor Biological Laboratory will also be aboard to act in an advisory capacity. The PHS will make collections and observations for the study of water chemistry, currents, bottom fauna, plankton, and bacteria.

LAKE ERIE FISH POPULATION SURVEY FOR 1962 SEASON BEGINS:

M/V "Musky II" (March 1962): The 1962 field operations of the U. S. Bureau of Commercial Fisheries research vessel Musky II on Lake Erie were begun on April 1. The 1962 activities will be similar to those in 1961. The fishery unit stationed at Sandusky and the Limnological staff from the Bureau's

Ann Arbor Biological Laboratory will again conduct closely related studies in a coordinated program.

A study of the variability in trawl catches in a given area within a short period of time, begun in 1960, will be continued at the Bono and East Harbor stations during the spring, summer, and fall. On 3 consecutive days in each season, two 10-minute hauls will be made with a standard bottom trawl at each of three depths, during the morning, afternoon, and evening (total of 54 tows at each station during each season). Collections during the series and during regular bimonthly trawling at East Harbor and Sandusky Bay will provide material for life-history studies of various species.

Intensive sampling with fry nets and experimental trawls will be made during the spring to determine localities and dates of spawning of several species, and to estimate spawning success.

Extensive collections of fish, bottom fauna, and plankton will be made, and water temperature, transparency, and chemistry will be determined at seven index stations originally established in the western basin in 1958.

Special studies will be undertaken to obtain more knowledge of the effect on fish of the severe depletion of dissolved oxygen which occurs in the central basin. Emphasis will be placed on the effect of this oxygen deficiency on fish distribution, food habits, behavior, and survival.

The semiannual sampling of the major species in the commercial catch will continue as in previous years. The spring sampling was expected to be under way by late April.

Commercial operations in March were slow to start in Ohio and elsewhere, in spite of the official opening of the fishing season. Extensive ice in all parts of the lake restricted the activities to a small amount of gill-netting. Catches were reported to be mediocre, considering the amount of effort expended.

CHEMICAL TREATMENT FOR LAKE SUPERIOR STREAMS TO ERADICATE SEA LAMPREY:

The continuing battle against sealamprey by chemical treatment will be waged this

year in 32 lake trout streams tributary to Lake Superior and the St. Marys River, the U. S. Bureau of Commercial Fisheries reports.

Under a permit issued recently by the Michigan Conservation Department, the Bureau hopes to re-treat 24 Lake Superior streams. It also plans to make its first chemical attack on the lamprey in 6 Lake Superior streams and 2 tributaries to the St. Marys River where studies reveal the presence of young sea lamprey.



Perforated hose used to introduce chemical into stream.

Chemical treatments were scheduled to get under way in late April, starting in streams of the western upper peninsula. By the end of June, this work was scheduled to be completed in Carlton Creek and Big Munuscong River, Chippewa County; Au Train River, Alger County; Boston-Lilly Creek, Pilgrim River, and Gravaet River, Houghton County; and Iron River, Marquette County.

Treatment of Carlton Creek and Big Munuscong River will match work already completed by Canada in its streams along the north channel of the St. Marys River.

Of the streams listed for treatment this spring, all but the Au Train and Iron Rivers are new to the lamprey control program. Three Mile Creek and Dead Sucker River, Luce County, and Otter River, Baraga County, are also due for initial treatment during the year.

Since 1958 when the chemical war on sea lamprey began, 75 Lake Superior streams

have been treated, 52 of them in Michigan. Latest survey results show that the program has reduced considerably the rate of fresh lamprey scarring on lake trout in different areas of Lake Superior.

During 1961, treatments were made in 33 lamprey-producing streams along the north shore of Lake Michigan. Surveys nearing completion in April 1962 point up the production of sea lamprey in 53 other Lake Michigan streams.

Lamprey control efforts will be continued in the Lake's northern streams during 1962 if they will not interfere with work plans for the Lake Superior tributaries. Scope of the Lake Michigan program will also depend on whether there are further encouraging signs of lamprey reduction at electrical barriers in Lake Superior streams this spring.



Gulf Exploratory Fishery Program

MIDWATER TRAWLING AND ESCAPEMENT BEHAVIOR OF PELAGIC FISH STUDIED:

M/V "Oregon" Cruise 77: To complete measurements of performance on three different experimental midwater trawls and six types of otter boards, and to continue motion picture studies of the reaction of pelagic sardine-like fish to midwater trawling gear in the Mississippi Delta area were the principal objectives of the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon. The cruise was conducted in nine intermittent phases between January 18 and April 3, 1962.

A total of 61 stations was completed in the Mississippi Delta area, most of which were devoted to gear mechanics studies. A total of 12,700 feet of motion picture film was exposed using remote-controlled underwater cameras placed inside the trawl and along the headrope. Heavy turbidity severely affected most of the footage, but fair to excellent results showing gear performance and reactions of several species of fish within the net were obtained on 3,300 feet. In general, the most abundant species, thread herring (Opisthonema oglinum), butterfish (Poronotus triacanthus), and razorbellies (Harengula pensacolatae) were found to concentrate heavily in the body and throat of the trawl. There they showed remarkable tenacity and endurance in maintaining their relative position within the trawl, swimming vigorously

forward, and not becoming disoriented in even the most turbid water. Endurance determinations will require detailed studies of the films, but in general the movement of fish back through the net toward the cod end seemed slight at towing speeds of 4 knots or less. The few observations at faster speeds indicated some disorientation. Anchovies (Anchoa hepsetus) appeared to be quite passive and displayed no discernible escapement reactions.

Several hundred feet of film were exposed in small cameras mounted on the headrope and upper wings. The complete absence of fish in the camera fields indicates that most fish enter near the footrope. However, no cameras were mounted on the footrope owing to frequent encounters with the bottom during haul-back.

Note: See Commercial Fisheries Review, Nov. 1961 p. 23.



Gulf Fishery Investigations

Some of the highlights of studies conducted by the Galveston Biological Laboratory of the U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries during January-March 1962:

ESTUARINE PROGRAM: Ecology of Western Gulf Estuaries: Scheduled field work continued during the first quarter of 1962 in the three study areas of Clear Lake, Offats Bayou, and Trinity Bay. Some difficulty was experienced in obtaining samples on schedule from Trinity Bay because of inclement weather.

The dominant species of fish, such as the croaker, anchovy, spot, and menhaden, occurred in expected numbers, but there was a delay of a couple weeks in the occurrence of young menhaden in quantity, possibly due to the effects of the extended freeze in January. Two groups of organisms, differing in their occurrence from 1961, include postlarval shrimp and very small (8-12 mm.) flatfish.

Postlarval shrimp (probably brown shrimp) first occurred in the Trinity Bay samples on March 2, which is somewhat earlier than last year. The distribution of postlarval shrimp was also interesting: the Cross Bayou station in the northwest corner of Trinity Bay, farthest from the pass at Galveston, produced approximately five times as many post-

larval shrimp as each of the two stations in the southern part of Trinity Bay.

Effects of Engineering Projects: During the quarter 56 appraisals were made of engineering projects potentially affecting estuarine fishery resources, under the present system of coordination with the Branch of River Basin Studies; only three did not involve Texas estuarine waters. The majority resulted from the more than 85 Corps of Engineers public notices and letters received during the quarter, and screened to determine which projects could materially affect estuarine and marine fishery resources. Sampling at 12 stations in Trinity Bay was continued through January on a weekly basis, when conditions permitted, in connection with a study of the effects of the Wallisville and Livingston Dam Project (CE) upon bay fauna.

Research relative to the Colorado River Special Study was initiated in February, and 10 stations were established in Matagorda and East Matagorda Bays, the Intracoastal Waterway, and the lower Colorado River to determine the effects of proposed consumptive water usage upon marine fishery resources. Sampling at each station includes both surface and bottom salinity and temperature measurements and a trawl haul for biological specimens. An additional station at Parker's Cut, between the Colorado River and the eastern arm of Matagorda Bay, was established for sampling only salinity and temperature, since the depths are too irregular for trawling. Additional data are being recorded for meteorological conditions and for salt wedge intrusions into the river and into Parker's Cut.

SHRIMP FISHERY PROGRAM: Migrations of Pink Shrimp: A mortality experiment involving pink shrimp on the Sanibel grounds was begun on March 19, 1962, using the Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay. Shrimp ranging from 20 to 53 mm. carapace length were marked with fast green FCF. A total of 2,496 shrimp was released in 26 releases, using the underwater release box. As of March 27, 1962, two marked shrimp were recovered. As a part of the recovery phase, a series of experiments will be conducted to estimate the number of stained shrimp recaptured but not discovered on the shrimp vessels or in the heading houses.

Shrimp Spawning Populations: Stained sections of ovaries from an additional 400

brown shrimp, Penaeus aztecus, were examined during the quarter. As observed in earlier collections, females taken from deeper waters generally had more advanced ovaries. Of the brown shrimp ovaries taken from September through December 1961 at 7½- and 15-fathom stations, less than 27 percent had advanced beyond the developing stage. More than half the brown shrimp from the 25-fathom stations were in the yellow or further advanced stages, and 16 percent of those taken in 45 fathoms were ripe or spent.

Shrimp Larval Studies: An illustrated key to larval Penaeidae (genus only) was completed. Including only forms known to occur in the northern Gulf, the key treats protozoal, mysis, and postlarval stages, and is now being tested through use in the laboratory.

Continuing attempts to differentiate species of Sicyonia larvae found in the plankton samples reveal slight morphological differences in the protozoal stages but none in the mysis stages.

At the end of the first quarter, ripe specimens of brown shrimp and Trachypeneus were obtained in experimental hauls by the M/V Silver Bay midway between New Orleans and Galveston. Immediately after being brought into the laboratory, representatives of both species released large numbers of viable eggs. Trachypeneus eggs began to hatch soon thereafter, whereas, none of the brown shrimp eggs survived.

During the quarter 43 plankton samples collected during October, November, and December 1961 were examined for penaeid larvae.

In July, August, and September of 1961 penaeid larvae were distributed over the entire sampling pattern. This distribution did not persist through the ensuing 3 months, however. Nauplii and protozoa occurred at the 7½-fathom stations only until October, while mysis and postlarvae persisted until the end of November. At the 15-, 25-, and 45-fathom stations, all stages of penaeid larvae were encountered. The majority of protozoa and mysis larvae occurred at the 15- and 25-fathom stations while most postlarval shrimp were encountered at the 25-fathom stations.

The relative abundance of penaeid larvae decreased markedly at all stations in late

November and December, reaching a low comparable to that of January 1960.



A drift bottle and seabed drifter study was initiated in February in order to supplement the current meter and temperature/salinity measurements made at each monthly station. In February and March, 1,384 drift bottles and 702 seabed drifters were released at stations located from the mouth of the Mississippi River to Brownsville, Texas. At the end of March, 3 percent of the drift bottles and less than 1 percent of the seabed drifters had been recovered. From the initial drift bottle recoveries, it appears that there is a strong, westerly surface current. Due to the meager recoveries of seabed drifters very little can be said at this time concerning bottom currents.

Migrations of Brown and White Shrimp: Experiments to test the suitability of various inks, and fluorescent dyes and pigments as primary or secondary marking agents were initiated during the quarter.

Of the eight inks tested on small white shrimp (70-100 mm.), Bates numbering machine inks--green, blue, and black--showed the most promise. The inks are easily seen in the branchial region of the shrimp up to 43 days after staining. The "control" shrimp, injected with sterile double-distilled water, showed significantly less mortality than the stained shrimp.

A second experiment still in progress and using the same species and size range of shrimp, indicates Sanford numbering machine inks--red, blue, and black and two fluorescent pigments, Day-Glo blaze orange and neon red--also have possibilities as secondary marks.

An experiment using fast green with Rhodamine B, a fluorescent dye, as a secondary

mark, showed the latter dye to have almost completely disappeared 5 days after staining.

Publicity was completed for the offshore marking experiments commencing on March 30. Posters describing the program and recovery kits were distributed from Brownsville, Tex., to Bayou LaBatre, Ala.

Commercial Catch Sampling: Sampling of the size and species composition of commercial shrimp landings continued at the Port of Galveston. Additional sampling stations were established at Aransas Pass, Texas, and Morgan City, La. The biologist at Aransas Pass covers landing activities at the neighboring ports of Fulton Beach and Rockport, while the biologist at Morgan City collects information from the ports of Berwick and Patterson.

Landings during the first quarter were scattered and below average in quantity, primarily because of weather.

Sampling and recording procedures have been standardized, and a small tape recorder was tested and is now used for rapid recording of shrimp measurements during unloading and processing at the docks. Additional data are being obtained from all commercial species on the tail length and total length relationship.

A total of 11,900 shrimp of three species was measured during the quarter--9,500 brown, 2,200 white, and 200 pink shrimp.

Bait Shrimp Fishery: Final tabulation disclosed that bait shrimp production in the Galveston Bay area totaled 731,200 pounds in 1961 compared with the previous year's total of 943,400 pounds.

Most of the bait shrimp retailed in the Galveston area during the first quarter of 1962 originated offshore in the Gulf of Mexico, Matagorda Bay, or Sabine Lake.

Postlarval Shrimp Survey: Semiweekly monitoring of postlarval shrimp moving into Galveston Bay continued during the quarter; the greatest number (1,220) were sampled on February 26. Great variations in number between sampling periods appeared to be related to fluctuations in temperature. Following rapid drops in temperature, very few postlarvae were collected, and on two occasions great numbers of dead postlarval shrimp were noted.

INDUSTRIAL FISHERY PROGRAM: Atlantic croaker, spot, and sea trout continued to dominate landings which fell slightly below 17 million pounds in the first quarter of 1962, a 25-percent drop from production during the corresponding quarter a year earlier.

Monthly indices of collective abundance of fish supporting the upper Gulf's industrial trawl fishery were computed from statistics of 290 vessel trips covering the period October 1960-March 1961. The average catch per tow by smaller vessels operating east of the Delta ranged from 0.32 ton (Feb.) to 0.75 ton (Oct.), and decreased 42 percent during the first quarter this year. Catches per unit of effort of large vessels (over 60 feet long) fishing west of the Mississippi Delta varied between 0.38 ton (Oct.) and 1.00 ton (Dec.), and decreased steadily from December through March. The over-all average for the 6-months period was nearly equal in both areas.

Continuing analysis of data secured during 1961 in sampling operations off western Louisiana and eastern Texas indicates that concentrations of fish having commercial potential are greatest in nearshore waters (to 20 fathoms) during summer months, and in deeper shelf waters (20-50 fathoms) in winter.

Cursory investigation of food preference in the more abundant species disclosed that shrimp constituted the major if not the primary element in the diets of most. Several kinds of shrimp were represented among the fish-stomach contents, but noncommercial species greatly outweighed those of commercial importance.

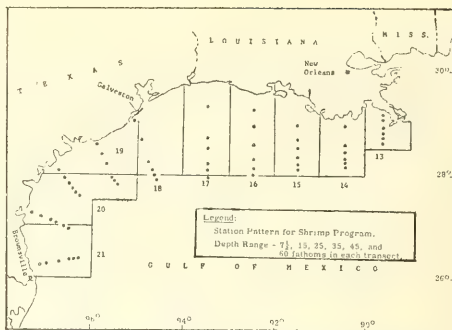
Note: See Commercial Fisheries Review, Dec. 1961 p. 32.

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SHRIMP DISTRIBUTION STUDIES:

M/V "Belle of Texas" Cruise BT-19 and "Miss Angela" Cruise MA-13: Only moderate catches of shrimp were made by the research vessels M/V Belle of Texas and the M/V Miss Angela between April 18-27, 1962. Both of the vessels are operated by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries in studying the distribution of shrimp in the Gulf of Mexico.

A total of 9 statistical areas were covered. One 3-hour tow was made in each of 3 depth ranges in each area. A 45-foot shrimp trawl



Shows the station pattern for cruise BT-19 of the M/V Belle of Texas and cruise MA-13 of the M/V Miss Angela, April 18-27, 1962.

was used. Most of the catches consisted of brown shrimp, but there were a few catches in which white and pink shrimp were found. The largest single catch was 31 pounds (all brown) of 12-15 count shrimp in 20-40 fathoms in area 14. This same area yielded 6 pounds of 12-15 count brown shrimp in the 40-60 fathom range and 1 pound of 12-15 and 15-20 count shrimp in the 0-20 fathom range. The catch in area 15 consisted of 21 pounds of 15-20 count brown shrimp in the 20-40 fathom range, 22 pounds of 12-15 count brown shrimp in the 40-60 fathom range, and 4 pounds of 21-25 count white shrimp in the 0-20 fathom range.



Hawaii

YIELD OF SKIPJACK TUNA FISHERY THIS YEAR EXPECTED TO BE BELOW AVERAGE:

Since 1959 annual predictions for the skipjack tuna fishery, in terms of above or below average catch, have been made to the Hawaiian fishing industry by the Honolulu Biological Laboratory of the U. S. Bureau of Commercial Fisheries. Such predictions are of considerable value to the industry, for changes in skipjack availability result in total annual landings ranging from 6 to 14 million pounds. The prediction can usually be made by the end of March and therefore is well ahead of the peak fishing months of June and July.

The forecast is based on an empirical relationship between annual landings and an

oceanographic index derived from weekly sea water surface temperatures at Koko Head on the island of Oahu. Since adequate data first became available in 1951, it has been found that better than average landings followed when the initial heating at Koko Head occurred before the end of February and poorer than average landings followed when initial heating occurred during March. There have been no exceptions to this relationship.

This year, the initial heating occurred in March and it is therefore believed that availability of skipjack to the Hawaiian fishery will be somewhat below average.



A skipjack catch waiting to be unloaded.

The initial heating index can best be obtained from the Koko Head heating curve showing the monthly rate of change of surface temperature. The shape of this curve, as well as the time of initial heating, reflect oceanographic conditions or "the oceanographic climate" in the Hawaiian region. The sequence of observations is now sufficiently extended that years with similar oceanographic climates can be recognized.

Two groups of years are easily identifiable from the shape of their heating curves. The years within each group had similar skipjack catch rates. The years 1954, 1959, and 1961 were marked by early heating, followed by a period of cooling and another major period of heating; skipjack catch rates were the best of the past decade. By contrast,

the years 1955 and 1960 were characterized by late initial heating, followed immediately by the major heating period and lacking the intervening cooling period; skipjack catch rates during those years were all lower than average. Recognizing these patterns, it is believed that the oceanographic conditions for 1962 will be similar to those of 1955 and 1960, and on the basis of similar catch rates, we add to the 1962 forecast of below average landings, that the catch rates will probably be similar to those of 1955 and 1960.

As important as these forecasts based on the empirical associations between oceanographic conditions and the availability of fish are, it is even more important for long-range benefits to gain an understanding of the significance of these associations. To this end, on the basis of the oceanographic climate and certain hypotheses regarding skipjack occurrence, it is believed that the center of skipjack availability will be displaced northwestward along the Hawaiian Island chain during 1962. Records of catch locations for 1955 and 1960 show a trend in this direction. If it is possible to do so, it is planned to test this hypothesis during the coming summer and thus add to our understanding of this valuable resource.



Industrial Fishery Products

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, January-February 1962: Based on domestic production and imports, the United States available supply of fish meal for the first 2 months of 1962 amounted to 49,000 tons--20,300 tons or 71 percent above the same



A typical menhaden purse-seiner operating out of Reedville, Va.

U. S. Supply of Fish Meal and Solubles, January-February 1961-62 and Total for 1961

Item	January-February		Total
	1962 1/	1961	1961
(Short Tons)			
Fish Meal and Scrap:			
Domestic production:			
Menhaden	-	-	247,551
Tuna and mackerel	2,928	2,880	21,243
Herring, Alaska	-	-	3,810
Other	1,870	1,946	38,661
Total production ...	4,798	4,826	311,265
Imports:			
Canada	5,757	3,898	38,218
Peru	35,231	17,334	151,439
Chile	1,157	1,061	12,074
Angola	-	-	1,543
So. Africa Republic	2,000	1,486	13,026
Other Countries	101	96	1,545
Total imports	44,246	23,875	217,845
Available fish meal supply	49,044	28,701	529,110
Fish Solubles:			
Domestic production 2/ ..	3,114	2,985	111,254
Imports:			
Canada	208	194	1,001
So. Africa Republic	-	180	1,351
Other Countries	2,314	-	4,387
Total imports	2,522	374	6,739
Available fish solubles supply	5,636	3,359	117,993
1/Preliminary. 2/50 percent solids. Includes production of homogenized condensed fish.			

period of 1961. Domestic production was slightly less, but imports were nearly 20,400 tons greater than in the 2-months period of 1961. Peru continued to lead other countries with shipments of 35,200 tons during the first 2 months of 1962--slightly more than twice the quantity imported in the same period of the previous year.

The total United States supply of fish meal in 1961 of 529,100 tons exceeded the peak year 1959 when the quantity amounted to almost 440,000 tons.

The United States supply of fish solubles (including homogenized fish) during January-February 1962 totaled 5,600 tons--2,300 tons more than during the same period in 1961. Solubles and homogenized fish of 3,100 tons manufactured from domestically-caught fish made up 55 percent of the 2 months supply in 1962.

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FISH MEAL, OIL, AND SOLUBLES:

U.S. Production and Foreign Trade, February 1962: In February 1962, 2,100 tons of fish meal and scrap and 49,100 gallons of marine animal oils were produced in the United States. Compared with February 1961, this was a decrease of 1 percent in meal and scrap production, but an increase of 4 percent in oil.

In February 1962, tuna and mackerel accounted for 1,300 tons or 62 percent of the meal total, and 34,700 gallons or 71 percent of the oil production.

There were 1,500 tons of fish solubles produced in February 1962--54 tons above the same month of 1961. The

Table 1 - U.S. Production of Fish Meal, Oil, and Solubles, February 1962 with Comparative Data

Product	February		Jan.-Feb.		Total
	1962 1/	1961	1962 1/	1961	1961
(Short Tons)					
Fish Meal and Scrap:					
Alewife	-	-	-	-	89
Herring:					
Alaska	-	-	-	-	3,810
Maine	-	-	-	-	1,374
Menhaden 2/	-	-	-	531	247,551
Sardine, Pacific	234	-	689	-	2,518
Tuna and mackerel	1,287	1,313	2,928	2,880	21,243
Unclassified	545	775	1,181	1,415	24,380
Total	2,066	2,088	4,798	4,826	300,965
Shellfish and marine animal meal and scrap	3/	3/	3/	3/	11,090
Grand total meal and scrap	3/	3/	3/	3/	312,055
Fish solubles	1,476	1,422	2,984	2,840	112,086
Homogenized condensed fish	90	80	130	145	11,690
(Gallons)					
Oil, body:					
Alewife	-	-	-	-	12,053
Herring:					
Alaska	-	-	-	-	727,517
Menhaden 2/	-	-	-	10,050	31,355,570
Sardine, Pacific	4,911	-	19,111	-	86,167
Tuna and mackerel	34,696	24,055	72,512	51,908	762,509
Other (including whale)	9,517	23,194	51,747	48,332	1,464,989
Total oil	49,124	47,249	143,370	110,290	34,408,805
1/Preliminary data. 2/Includes a small quantity produced from thread herring. 3/Not available on a monthly basis.					



View of menhaden reduction plant at Reedville, Va.

production of homogenized condensed fish amounted to 90 tons—a slight gain compared with February 1961.

Imports and Exports, January 1962: Imports of fish meal and scrap in January 1962 (25,400 tons) were 167 percent greater than in January 1961, and imports of fish solubles (273 tons) were up 25 percent. Exports of fish oils and fish-liver oils in January 1962 amounted to 509,300 pounds compared with 13.4 million pounds in January 1961.

Table 2 - U. S. Foreign Trade in Selected Industrial Products, January 1962 with Comparative Data

Product	January		Total
	1962 1/	1961	1961
..... (Short Tons)			
Imports:			
Fish meal and scrap	25,427	9,531	217,845
Fish solubles	273	219	6,739
..... (Gallons)			
Whale oil, sperm (crude and refined)	303,034	361,237	7,807,625
..... (Pounds)			
Exports:			
Fish and fish liver oils ..	509,259	13,448,735	122,485,721
Whale and sperm oil	13,982	-	1,205,674
1/Preliminary data.			

* * * * *

United States Major Indicators, March 1962: For the first two months of 1962, production and imports of fish meal and solubles were up as compared to the same months in 1961. Production of fish oil and exports were also up.

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, March 1962

Item and Period	1962	1961	1960	1959	1958
..... (Short Tons)					
Fish Meal:					
Production 1/:					
May	-	32,922	17,194	25,312	17,433
April	-	6,179	5,076	6,810	5,143
March	2,700	2,751	2,955	2,122	2,601
Jan.-Feb.	4,798	4,263	4,191	5,223	3,917
Jan.-Dec. preliminary tot. 2/ ..	-	289,039	257,969	275,396	226,299
Jan.-Dec. final tot. ..	-	311,265	290,137	306,551	248,140
Imports:					
May	-	24,753	9,496	16,329	8,949
April	-	19,060	10,397	17,654	11,758
March	-	20,458	18,652	16,719	7,233
February	18,158	14,344	8,081	19,463	11,219
January	25,427	9,531	8,571	19,700	7,696
Jan.-Dec. totals ..	-	217,845	131,561	132,955	100,352
..... (Short Tons)					
Fish Solubles:					
Production 3/:					
May	-	12,667	7,370	18,639	9,351
April	-	2,539	2,870	6,987	3,619
March	1,362	2,295	2,462	2,382	1,371
Jan.-Feb.	3,114	2,651	3,509	4,124	2,518
Jan.-Dec. totals ..	-	111,254	98,929	165,359	130,177
Imports:					
May	-	283	59	4,874	1,405
April	-	220	134	1,622	45
March	-	135	87	410	84
February	2,249	155	1,875	398	149
January	273	219	214	954	473
Jan.-Dec. totals ..	-	5,739	3,174	26,630	14,567
..... (1,000 Gallons)					
Fish Oils:					
Production:					
May	-	4,367	1,768	2,604	2,166
April	-	439	248	436	200
March	47	63	66	42	84
Jan.-Feb.	143	98	105	102	95
Jan.-Dec. preliminary tot. 2/ ..	-	33,471	26,690	24,418	21,957
Jan.-Dec. totals 2/ ..	-	34,416	27,886	24,978	22,028
Exports:					
May	-	426	324	1,455	293
April	-	980	761	1,116	254
March	-	753	421	600	1,664
February	2,886	2,327	3,177	999	1,038
January	68	1,793	276	898	825
Jan.-Dec. totals ..	-	16,331	19,155	19,264	12,539

1/ Does not include crab, shrimp, and macr. meals.

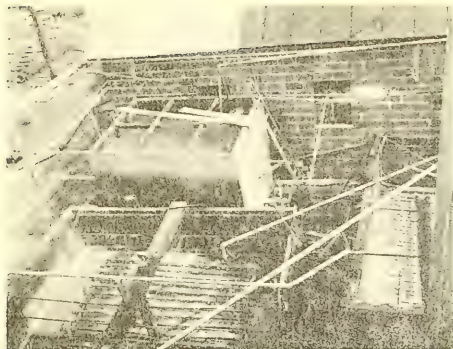
2/ Preliminary data, computed from monthly data. Fish meal production reported currently comprised 86 percent of the annual total for 1958, 90 percent for 1959, 89 percent for 1960, and 92 percent for 1961. Fish oil production reported currently accounted for over 95 percent of the total production each year.

3/ Includes homogenized fish.

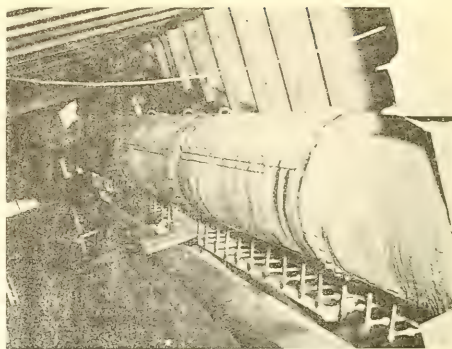
Note: Data for 1962 and 1961 are preliminary.

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U. S. Production, March 1962: Preliminary data on U. S. production of fish meal, oil, and solubles for March 1962 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the following table.



Another view of menhaden reduction plant at Reedville, Va.



Cookers used to process fish at a menhaden plant in Reedville, Va.

U.S. Production ^{1/} of Fish Meal, Oil, and Solubles, March 1962 (Preliminary) with Comparisons				
Region	Meal	Oil	Solubles	Homog- enized
	Short Tons	1,000 Gallons	Short Tons	
March 1962:				
East & Gulf Coasts	899	10	229	3/100
West Coast ^{2/}	1,886	37	1,333	-
Total	2,785	47	1,762	100
Total:				
Jan.-Mar. 1962	8,248	186	5,017	230
Jan.-Mar. 1961	7,556	162	4,986	295

^{1/}Does not include crab meal, shrimp meal, and liver oils.
^{2/}Includes Hawaii, American Samoa, and Puerto Rico.
^{3/}Includes condensed fish.

* * * * *

U. S. Production, 1961: The production of industrial fishery products by 170 plants in the United States, American Samoa, and Puerto Rico in 1961 was valued at \$74.5 million to the processors.

Final data for 1961 shows that production of fish scrap and meal amounted to 311,000 tons valued at \$32 million to the processors. This was 21,000 tons more than in 1960 and exceeded the previous record established in 1959 by nearly 5,000 tons. Menhaden meal accounted for 80 percent of the total production of fish meal.

Production of fish and fish-liver oils in the United States and Puerto Rico totaled nearly 35 million gallons. The production was 23 percent above that of 1960 but below the record 40 million gallons produced

in 1936. Menhaden oil established a new record and accounted for 91 percent of the 1961 production.

The yield, during 1961, of homogenized condensed fish (nearly 12,000 tons) was about 2,000 tons above that of the previous year. Production of fish solubles (100,000 tons) was about 10,000 tons larger than in 1960.



Maine Sardines

CANNED STOCKS, APRIL 1, 1962:

Distributors' stocks of Maine sardines totaled 148,000 actual cases on April 1, 1962--119,000 cases or 45 percent less than the 267,000 cases on hand April 1, 1961. Stocks held by distributors on January 1, 1962, amounted to 193,000 cases, and on November 1, 1961, totaled 202,000 cases, according to estimates made by the U. S. Bureau of the Census.

Canners' stocks on April 1, 1962, totaled only 45,000 standard cases (100 3 $\frac{1}{2}$ -oz. cans), a decline of 461,000 cases (91.0 percent) as compared with April 1, 1961. This reflected one of the shortest packs in recent years for 1961. Stocks held by canners on January 1, 1962, amounted to only 144,000 cases and on November 1, 1961, totaled 221,000 standard cases.

The Maine Legislature authorized a 1962 season of 13 months--December 2, 1961-

Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, April 1, 1962, with Comparisons												
Type	Unit	1961/62 Season			1960/61 Season				1959/60 Season			
		4/1/62	1/1/62	11/1/61	7/1/61	6/1/61	4/1/61	1/1/61	11/1/60	7/1/60	6/1/60	4/1/60
Distributors'	1,000 actual cases	148	193	202	208	215	267	233	277	172	197	252
Canners'	1,000 std. cases 2/	45	144	221	201	294	506	1,029	1,258	359	235	397

1/ Table represents marketing season from November 1-October 31.
2/ 100 $\frac{3}{4}$ -oz. cans equal one standard case.

January 1, 1963. The 1961 season was from April 15 to December 1, the usual legal packing season for canned sardines in Maine. But as of the end of March 1962 the extended season had not yielded very much. The pack December 2, 1961, to April 7, 1962, was only 15,541 standard cases. And as of April 30, 1962, there were no indications of an early spring run of sardines. What sardines were landed were caught by purse seiners in off-shore waters. But the industry was still looking forward to a normal pack for 1962. Heavy landings were not expected until the end of May.

Shipments from April 15, 1961, to April 1, 1962, of 1,087,000 cases were substantially less than the 1,794,000 cases shipped in the same period a year earlier. The drop in shipments was due almost entirely to the small 1961 pack.

Note: See Commercial Fisheries Review, March 1962 p. 21.

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RESEARCH SUGGESTS CANNED MAINE SARDINES PROMOTE HEALTHIER ARTERIES:

A researcher told the Federation of the American Society for Experimental Biology in Atlantic City on April 16, 1962, that frequent substitution of a can of Maine sardines, for other calories in the diet, produces a desirable effect on the blood of humans that

may contribute towards the prevention of arteriosclerosis.

Dr. T. F. Kelley of Bio-Research Consultants, Cambridge, Mass., reported this finding in a paper on recent research conducted by his organization.

He said that in the work, carried on in laboratories and hospitals, 62 patients with high serum cholesterol ate one can of Maine sardines a day ranging from one week to six months.

"It was found that their total serum lipids or fats decreased significantly during these periods," he stated.

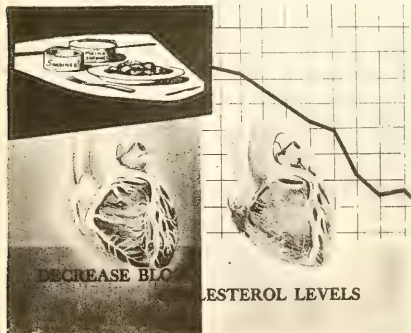
Dr. Kelley further explained that the beneficial effect can be explained to some extent by the ingestion of polyunsaturated fats contained in Maine sardines.

"If a recent statement by the American Heart Association that reasonable substitution of polyunsaturated fats for saturated fats is recommended as a possible means of preventing arteriosclerosis and decreasing the risks of heart attacks and strokes, is valid, the present observations suggest that a similar effect may be achieved to some extent by substituting one can of Maine sardines a day for a portion of the diet," he added.

The Maine Sardine Council Chairman hailed the findings as a significant development for the State's big sardine industry.

"We have always known that Maine sardines were a highly nutritive and healthful food and this further supports our contention as did animal feeding experiments at Massachusetts Institute of Technology last year," he said.

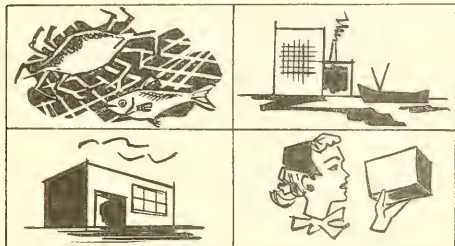
In the latter experiments animals fed a diet of sardines showed a much lower cholesterol level than those on a diet of a well known household type of saturated fats. (Maine Sardine Council, Augusta, Maine, news release of April 16, 1962.)



Marketing

EDIBLE FISHERY PRODUCTS MARKETING PROSPECTS, SUMMER 1962:

Consumption of fishery products during 1961 in the United States reached almost 11 pounds per capita, an increase of about one-half pound over the rate in 1960. During the summer of 1962, it is expected that the per capita consumption rate will be up seasonally and should continue at about the year-earlier rate during the remainder of 1962.



Retail prices went up a little during the first quarter of 1962 and averaged 4 percent above a year earlier. They were expected to continue at that level during the second quarter.

Supplies of edible fishery products become more plentiful with the beginning of fishing operations in most segments of the industry during the late spring months. Commercial landings, which are already on a seasonal upturn, will reach a peak during June or July.

Total stocks of edible fishery products were at the low point of the year early this spring but will experience a gradual build-up with increased fishing activity during the summer. Holdings of frozen edible fishery products at the beginning of April were almost 20 percent lower than in April 1961. Packers' stocks of canned products were also lower than last year at that time and they will continue to decline seasonally until the 1962 canning season is well under way in early summer.

Imports of edible fishery products during the first two months of 1962 were 4 percent higher than those in the same period a year earlier, and are expected to continue high during the first half of 1962.

This analysis was prepared by the Bureau of Commercial Fisheries, U. S. Department of the Interior, and published in the Department of Agriculture's May 1962 issue of The National Food Situation (NFS-100).



Michigan

LAKE SUPERIOR WATERS CLOSED TO COMMERCIAL LAKE TROUT FISHING:

Final approval was given early in April 1962 by the Michigan Conservation Commission to the closing of commercial lake trout fishing in Michigan's Lake Superior waters. The restriction, another step toward bringing back the lake trout fishery of the upper Great Lakes, went to the State's Governor with the request that it be made effective June 1 of this year.

Wisconsin and Minnesota were scheduled to follow suit with similar restrictions. The states' joint effort to protect low lake trout populations from commercial fishing pressure was triggered by signs that chemical treatment of streams had made a significant cut in Lake Superior's sea lamprey.

This improvement in the lamprey picture, coupled with the ban on commercial fishing, will give impetus to natural reproduction in Lake Superior by an age class of lake trout due to reach maturity during 1962. Without the restriction, the commercial lake trout fishery of Superior would soon have been doomed to a total collapse, according to the U. S. Bureau of Commercial Fisheries.

A controlled lake trout harvest of about 40,000 pounds per year will still be made from Michigan's Lake Superior waters. Purpose of this is to continue studies on sea lamprey numbers, lake trout stocks and their natural reproduction, and other vital data.

This controlled harvest for assessment work will be done under arrangements made by the U. S. Fish and Wildlife Service whose services will be contracted by Michigan's Conservation Department.



Nautical Charts

ATLANTIC SUPPLEMENTAL CHARTS SHOW COASTLINE CHANGES CAUSED BY MARCH STORM:

A total of 27 supplemental charts showing changes in the storm-lashed Atlantic coastline during the week of March 6, 1962, have been published by the Coast and Geodetic Survey, U. S. Department of Commerce, it was announced on April 13, 1962. This completes the series of preliminary chart supplements intended to warn the mariner and chart user of shifted shorelines, shoaled channels, and other dangers.

The emergency supplements called "chartlets" by the nautical chart trade, were compiled directly from new aerial photography. The preliminary series are simple outlines showing alterations in the shoreline. Subsequent editions to be issued later in 1962 will include hydrography and aids to navigation. Ultimately the basic nautical charts of the Coast and Geodetic Survey will be revised to reflect the changes.

The chartlets are printed in black ink on thin white paper at the same scale as the basic chart. They may be placed over the basic chart to compare exact shoreline changes.

The 27 preliminary chartlets and their basic chart of reference are available free of charge to the chart-using public from authorized nautical chart agents of the Coast and Geodetic Survey.



New York

FISHERY LANDINGS, 1961:

Total landings of fish and shellfish in the Marine District of New York during 1961 amounted to 123.6 million pounds valued at \$9.1 million. Compared with 1960, this was a drop of 14 percent in quantity, but a gain of 5 percent in value. The decline in quantity was the result of a decrease in landings of whiting, unclassified fish used for animal food, and scup or porgy. The catch of yellowtail flounders registered the major increase.

Striped bass landings in 1961 were the highest annual commercial catch for the last



Unloading a trawler at the Fulton Fish Market dock, New York City. Fish are packed in ice for shipment.

16 years. The heavy run of that species was attributed to a very large year-class that were too small for the market during the previous year. Haul seines took the majority of the catch. The greatest landings of striped bass occurred in November.

New York City is the State's major fishing port. Total landings of 11.7 million pounds at that port's Fulton Fish Market showed a drop of 1.3 million pounds as compared with 1960. Scup, the principal species, was down 1.3 million pounds, butterfish was down 400,000 pounds. Because of the short supply, there was an improvement in the price of both of those species.

Menhaden landings in New York State in 1961 were approximately the same as in 1960, with only a small increase in value.

Hard clams are the most important species in terms of value in the State. The 1961 production was up. The value per bushel averaged lower for the year.

Oyster production continued at a low level and dropped 22,000 pounds below 1960, while the value increased \$163,000.

The bay scallop production during 1961 maintained a high level with a slight drop compared with the previous year's peak catch.



North Atlantic Fisheries Investigations

BIOLOGICAL DATA ON SEA SCALLOPS COLLECTED:

M/V "Charlotte" Cruise 5: In order to obtain live scallops for laboratory tank ex-

periments, to observe gonad development of sea scallops, and to obtain scallops for length-weight data, the vessel Charlotte chartered by the U.S. Bureau of Commercial Fisheries, operated 4 to 5 miles offshore of Barnstable, Mass., on April 7, 1962. The sex and condition of gonads of about 50 scallops were determined; 1 bushel of live scallops was culled from the total catch.

It was found that gonad development was proceeding normally to stage 6. One bushel of live scallops was brought back to the Bureau's Biological Laboratory at Woods Hole, Mass.

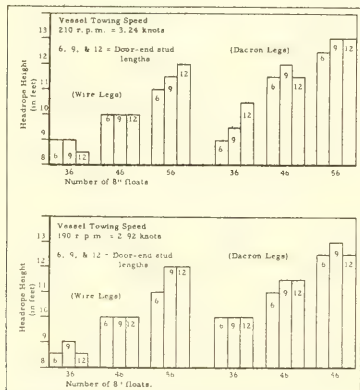
Note: See Commercial Fisheries Review, Jan. 1962 p. 25.



North Atlantic Fisheries Exploration and Gear Research

VERTICAL OPENING OF OTTER TRAWLS STUDIED:

M/V "Delaware" Cruise 62-4: To determine the relationship of the door-end-stud length and the vertical opening of a standard No. 41 otter trawl was the principal objective of the March 29-April 6, 1962, cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. Measurements were also taken to show the effect of various numbers of standard aluminum ball floats attached to the headrope and of lightweight dacron top legs as compared with wire legs.



Headrope Height Data Delaware Cruise 62-4.

Vertical openings of the trawl were measured by means of an echo-sounder transducer mounted on the headrope of the trawl and a bottom contact indicator light. Both instruments were connected to indicators in the vessel's pilothouse by a "third wire" electric cable.

When the footrope was on bottom, as indicated by the contact switch and light, the distance to the bottom as sounded from the transducer mounted on the headrope indicated the vertical opening of the trawl.

Door-end-studs of 6-, 9-, and 12-foot lengths were tested on the same No. 41 trawl under identical conditions. The following modifications were made to the trawl while testing each of the three stud lengths: (1) the number of floats was increased from 36 to 56, by groups of 10; (2) dacron (pretensioned) rope was substituted for top wire legs; (3) the lower wings were cut free from the sweep sections of the footrope.

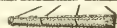
A total of 25 tows were conducted in an area 3 miles by 3 miles on Stellwagen Bank. Each tow consisted of four runs made with and against the tide at 210 r.p.m. (average speed 3.24 knots) and at 190 r.p.m. (average speed 2.92 knots).

The tests showed that the No. 41 otter trawl achieved an opening ranging from 8.5 feet to 13.5 feet. Highest headrope openings were attained with the lower wing cut free from the footrope sweeps and with the greatest number of floats (56) attached to the headrope.

Most significant findings of the cruise were: (1) the length of door-end studs did not appear to affect the opening of a No. 41 otter trawl; (2) increasing the number of floats increased the headrope height within the limitations of the netting; (3) dacron top legs helped to increase the headrope opening provided maximum opening had not already been reached through the use of floats; and (4) varying the towing speed between 3.24 and 2.92 knots did not affect headrope height.

Analyses of the data obtained indicated that the dimension of the No. 41 trawl netting sections restrict the headrope height to 13.5 feet. Higher opening of the trawl will require further modification of the trawl or use of a trawl of different design.

Note: See Commercial Fisheries Review, Nov. 1961 p. 25.



North Carolina

FISHERY LANDINGS, 1961:

Fish and shellfish landings in North Carolina during 1961 amounted to 276.6 million pounds, 20.8 million pounds (8 percent) above 1960. The production of food finfish was about 1 percent less than in the previous year. Shellfish landings declined 9 percent as compared with 1960.



Fig. 1 - A small vessel used for catching industrial fish, Beaufort, N. C.

The catch of menhaden and thread herring, used in the manufacture of fish meal, oil, and solubles, was 11 percent greater than in 1960. Lower landings of croaker, mullet, spot, and striped bass accounted for most of the decrease in the finfish production. Failure of the shrimp run was chiefly responsible for the drop in shellfish landings.



Fig. 2 - Menhaden net boats and dock unloading system at a pet food plant, Beaufort, N. C.

Otter-trawl fishing in outside waters was somewhat better than in 1960. The poor shrimp season may have been partly responsible since many of the large shrimp trawlers converted to fish trawls earlier in the fall than usual. Beach net fishing was not as

good as in the previous year. This fishery appeared to be decreasing in importance.

Landings of sea bass, which amounted to only 41,000 pounds in 1959, totaled 635,000 pounds in 1961, up sharply compared with the 126,000 pounds landed in 1960. This fishery seemed to be spreading to other southern areas and some of the dealers were optimistic regarding its future as a substitute for fisheries which were declining in importance.

Menhaden landings increased 16 percent. More vessels operated and only the bad weather during the latter part of the season prevented much greater landings. The price of menhaden oil was depressed in 1961, due to a loss of some of the export market, but the price of meal was somewhat better than in 1960.

The catch of hard blue crabs was 6 percent greater than in 1960. However, the crab market was poor during most of the year--resulting in low returns. Activity in the soft blue crab fishery was light, although 11 percent more soft shell crabs were produced than in 1960. The 1961 oyster production was practically the same as for the previous year. Landings of bay scallops increased 54 percent above 1960, while the catch of calico scallops dropped 80 percent.



North Pacific Exploratory Fishery Program

SURVEY OF DEEP-WATER MARINE FAUNA OFF MOUTH OF COLUMBIA RIVER CONTINUED:

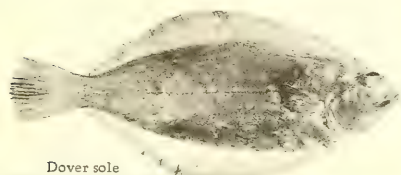
M/V "John N. Cobb" Cruise 53: The fourth in a series of cruises designed to monitor deep-water marine fauna at stations established along a track line southwest of the mouth of the Columbia River was completed on March 23, 1962, by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb. This cruise was also designed to extend the track line into deeper water off the Columbia River and to establish stations west of Destruction Island suitable for future resurveying. As in previous cruises, commercial otter-trawl nets were used for the survey.

A total of 17 stations at depths from 50 to 550 fathoms were successfully trawled off

the Columbia River. Regions surveyed off Destruction Island at depths greater than 75 fathoms were characterized by rough bottom which caused considerable damage to nets. One successful haul was completed at 200 fathoms in this region.

Samples of fish and shellfish were collected for the Atomic Energy Commission and delivered to the Laboratory of Radiation Biology at the University of Washington College of Fisheries for radiological analyses. Additional samples of Dover sole and sablefish were collected for study by the Bureau's Technological Laboratory in Seattle.

The Bureau-Oregon Fish Commission cooperative study of Dover sole migrations was continued, with release of 244 tagged fish caught at depths from 100 to 425 fathoms.



Dover sole
(*Microstomus pacificus*)

Commercial species of fish encountered off the Columbia River were the same as those taken in previous cruises, including sablefish (*Anoplopoma fimbria*), Dover sole (*Microstomus pacificus*), English sole (*Parophrys vetulus*), petrale sole (*Eopsetta jordani*), turbot (*Atheresthes stomias*), hake (*Merluccius productus*), and several species of rockfish. Some Dover sole and sablefish were found throughout the depth range fished. Largest sablefish catches ranging from 800 to 1,036 pounds per hour tow were caught at depths between 250 and 425 fathoms. The largest number of Dover sole were taken at the 200-fathom station. Good catches of 1,000 to 1,600 pounds per hour of ocean perch (*Sebastes*) were made at stations from 125-175 fathoms. Very few hake were taken during the survey.

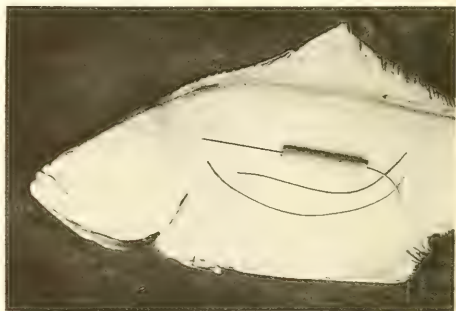


Sablefish
(*Anoplopoma fimbria*)

Catches of invertebrates increased in deeper water. Half of the total catch at the 550-fathom station consisted of invertebrates (starfishes and heart urchins). Male and female tanner crabs (*Chionoecetes tanneri*) were taken at the 350- and 375-fathom stations in contrast to previous cruises where they were found to occupy separate depth ranges. Egg-carrying females slightly outnumbered males.

The 200-fathom hauls off Destruction Island yielded 12,000 pounds of sablefish, mostly of subcommercial size.

The John N. Cobb left Seattle April 16, 1962, for 8 weeks of exploratory trawling for bottomfish in the Gulf of Alaska. The vessel was expected to return to Seattle June 8, 1962, from Cruise 54. The area of operation was to be Cape St. Elias to the general vicinity of Portlock Bank. The purposes of Cruise 54 were to determine the relative abundance and sizes of bottomfish and shellfish encountered in the area. Otoliths (ear bones) and scales were to be removed from commercial species of fish so that their ages can be determined. Halibut caught on the survey was to be tagged and



A fully-exposed dart tag lying beside one that has already been applied, and also a tag inserted into the hollow needle by which the tags are inserted in the halibut.

returned to the water to provide information on migration and growth. Sonic equipment was to be used to survey the bottom. A commercial otter-trawl net was to be towed over grounds indicated by the sonic gear as being trawlable. Catches made by the net were to be examined to assess the commercial fishing potential of the region.

Note: See *Commercial Fisheries Review*, Feb. 1962 p. 33, Apr. 1962 p. 20.

Oceanography

TROPICAL ATLANTIC COOPERATIVE INVESTIGATIONS SCHEDULED TO BEGIN IN 1963:

Cooperative investigations of the tropical Atlantic Ocean from South America to Africa are set to begin in January 1963, coordinated by the U. S. Fish and Wildlife Service's Bureau of Commercial Fisheries.

Proposed by the Bureau of Commercial Fisheries and accepted and sponsored by the Interagency Committee on Oceanography, this program will explore the equatorial Atlantic, one of the last remaining ocean areas with large stocks of underdeveloped food resources and what appears to be an enormous fishery potential. These fishery resources, so valuable as protein food, are sorely needed by peoples of West Africa and other parts of the world who lack, to a crippling degree, protein in their diet.

Although some research and exploration have been conducted by other nations in the tropical Atlantic, the Bureau's program will be a major fishery and oceanographic research project. It is now under consideration for submission to the Inter-governmental Oceanography Committee as a United States-sponsored international program.

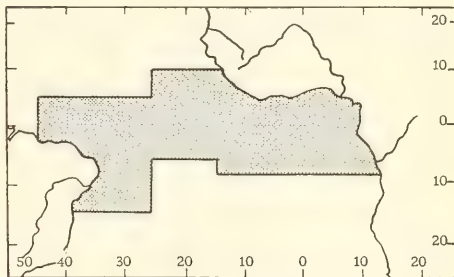
A review of what already is known about the area shows a lack of general knowledge about changes in the aquatic plant and animal life of the area as affected by currents, temperature, and other physical environmental factors. Therefore, the first year's work will be oceanographic research of a general descriptive nature, studying the complex surface currents, variances of water temperature, salinity, weather observations, nutrient content, the role of the Equatorial Undercurrent, and related topics. Pelagic fishery surveys will be carried out during 1964 and 1965, using results from the 1963 studies for experimental design of later work.

Cooperating in these investigations will be several universities, the U. S. Weather Bureau, the U. S. Coast and Geodetic Survey, and the U. S. Department of the Navy. Research vessels from Argentina and Brazil may participate, and expressions of interest have been received from Britain and France.

Anticipating the need for additional staff and facilities to carry on the greatly expanded work of the Bureau of Commercial

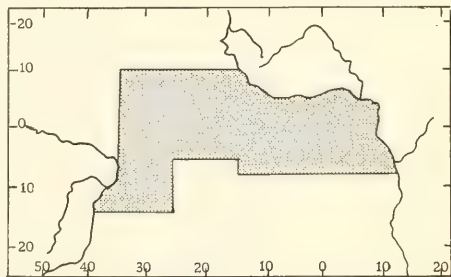
Fisheries' Washington, D. C., Biological Laboratory in this new program, the Laboratory moved May 1 to larger quarters in Building 74, Naval Weapons Plant. The Laboratory was previously located at 734 Jackson Place in Washington.

The program has been designated as the Tropical Atlantic Investigations and the first two synoptic or general surveys as **EQUALANT I** and **EQUALANT II**.



EQUALANT I, Jan.-Mar. 1963.

EQUALANT I will take place January-March 1963. As of March 1962, the ships committed to the survey include the Chain and Crawford of the Woods Hole Oceanographic Institution, Explorer of the U. S. Coast and Geodetic Survey, and Geronimo of the U. S. Bureau of Commercial Fisheries. The Oregon of the Bureau of Commercial Fisheries and the Ombango of the Pointe-Noire Laboratory may be used. An Argentine vessel will participate in the survey also.



EQUALANT II, July-Sept. 1963.

For **EQUALANT II**, covering July-September 1963, the only vessel definitely committed is the Geronimo of the Bureau of

Commercial Fisheries. However, Argentina and Brazil will cooperate in this phase as will the Pointe-Noire Laboratory, the Agricultural and Mechanical College of Texas, and the University of Rhode Island.



Pollution

FISH KILLED BY WATER POLLUTION IN 1961:

A total of 15 million fish were reported killed by water pollution in the United States in 1961, the U. S. Public Health Service's Division of Water Supply and Pollution Control announced on April 23, 1962. The new report shows that agricultural poisons led all known sources of fish kills during 1961, followed by industrial wastes. A total of 444 individual kills are represented in the summaries, many of them attributed to more than one source. The totals by categories follow:

Agricultural poisons: 75 reports accounting for 5.6 million fish killed; industrial wastes: 150 reports accounting for a total of 2.9 million fish killed; mining operations: 19 reports accounting for 1.1 million fish killed; other sources: 60 reports accounting for a total of 184,000 fish killed; domestic sewage: 52 reports accounting for 162,000 fish killed; and 79 unknown source reports accounting for 5.8 million fish killed.

The previous year's report, released on June 30, 1961, showed a total of 286 reports received from 36 States and a total of 6.3 million fish killed. Industrial wastes led as source of kills followed by agricultural poisons in that report.

Only five states did not report any fish kills, either because they did not occur or were not of significant amounts.

Total river mileage affected in the 1962 reports when given was 1,700 miles; in addition, 50 miles of lake and bay shorelines, and 6,000 acres of lakes, reservoirs, and bays.



Shrimp

UNITED STATES SUPPLY AND DISPOSITION, 1959-61:

With the sharp drop in landings in 1961 in the Gulf and South Atlantic States, the available supply in 1961 was substantially below 1960. If it had not been for the substantial increase in imports of shrimp, the 1961 supply would have been even less.



Bucket unloader used for unloading shrimp from trawlers, Tampa, Fla.

U. S. Supply and Disposition of Shrimp, 1959-61			
Item	1961 ^{1/}	1960 ^{2/}	1959
	..... (1,000 Lbs.)		
Supply--Heads-on Weight:			
Domestic catch	174, 200	249, 452	240, 182
Imports 3/	227, 189	197, 515	186, 202
Total supply	401, 389	446, 967	426, 384
Disposition--Heads-on Weight (Approximate):			
Frozen:			
Headless 4/	5/	287, 400	255, 646
Meat, raw 4/	5/	76, 370	51, 245
Meat, cooked 4/	5/	10, 390	10, 465
Breaded	5/	86, 460	83, 994
Specialties	5/	580	364
Total frozen 6/	328, 989	341, 287	322, 356
Canned	44, 400	56, 670	57, 730
Dried	4, 000	6, 330	3, 298
Fresh	24, 000	42, 680	43, 000
^{1/} Preliminary.			
^{2/} Revised.			
^{3/} Reported by the United States Bureau of the Census as "shrimp and prawn," which includes fresh, frozen, cooked, dried, canned, etc., as follows: 1959--106,555,000; 1960--113,418,000; and 1961--126,268,000 pounds. The equivalent heads-on weight was computed.			
^{4/} May include small quantities of fresh products.			
^{5/} Not available.			
^{6/} These totals do not add and are less than actual totals because products frozen more than once have been eliminated.			
Note: Shrimp data were compiled from figures assembled by the U. S. Tariff Commission and the Bureau of Commercial Fisheries Market News Service offices. To convert the weight of heads-on shrimp to heads-off, divide by 1.68.			

UNITED STATES SHRIMP SUPPLY INDICATORS, APRIL 1962:

Item and Period	1962	1961	1960	1959	1958
..... (1,000 Lbs., Heads-Off)					
Total Landings, So. Atl. and Gulf States:					
June	-	8,220	12,427	14,547	10,241
May	-	5,279	6,335	6,885	6,523
April	2,700	3,169	4,723	3,595	5,300
Jan.-Mar.	10,900	14,352	13,284	10,487	14,035
Jan.-Dec.	-	91,280	141,035	130,659	116,552
Quantity canned, Gulf States 1/:					
June	-	3,744	7,537	7,641	5,107
May	-	1,316	1,591	2,680	1,462
April	3	10	72	81	306
Jan.-Mar.	855	335	640	536	234
Jan.-Dec.	-	15,760	28,594	24,679	26,404
Frozen inventories (as of end of each mo.) 2/:					
June 30	-	19,416	15,398	19,283	10,664
May 31	-	24,696	17,540	21,137	11,013
April 30	-	27,492	20,502	23,331	12,211
March 31	16,607	31,345	23,232	24,893	14,501
January 31	-	31,842	34,332	30,858	17,963
Imports 3/:					
June	-	8,065	8,932	8,300	6,018
May	-	8,278	9,902	8,264	5,666
April	4/	9,208	7,733	9,051	5,446
March	9,658	10,347	8,545	8,492	4,986
Jan.-Mar.	33,164	31,617	24,798	24,211	15,148
Jan.-Dec.	-	126,268	113,418	106,555	85,393

1/Pounds of headless shrimp determined by multiplying the number of standard cases by 33.
 2/Raw headless only; excludes breaded, peeled and deveined, etc.
 3/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.
 4/Not available.
 Note: Data for 1962 and 1961 are preliminary. March 1962 data estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.



South Atlantic Exploratory Fishery Program

SHRIMP TAGGED IN GULF OF MEXICO AREA:

M/V "Silver Bay" Cruise 38 (March 14-April 13, 1962): To stain and tag shrimp for mortality and migration studies was the primary objective of the 31-day cruise of the exploratory fishing vessel Silver Bay of the U. S. Bureau of Commercial Fisheries. The tagging was done for the Bureau's Biological Laboratory at Galveston, Tex. The vessel returned to Brunswick, Ga., on April 13, 1962.

Approximately 2,500 pink shrimp were stained and released off Sanibel Island, Fla. A total of 2,431 stained and 1,632 tagged brown shrimp were released between Galveston and Aransas Pass, Texas. Postlarval penaeid shrimp and ripe brown shrimp were collected off the Louisiana coast.



South Carolina

FISHERY LANDINGS, 1961:

South Carolina landings of fish and shellfish during 1961 amounted to 19.2 million pounds--5 million pounds less than in 1960. The production of finfish was 1.6 million pounds greater than in 1960, while landings of shellfish dropped 6.6 million pounds. Most of the 1961 over-all decline was due to a disastrous drop in landings of shrimp, one of the mainstays of the economy of the commercial fisheries of that State.



Unloading shrimp from a trawler at Pt. Royal, S. C.

Weather conditions were generally favorable for all fishing during the year, except in September, when there were several days of high winds and rough seas. In July, the rainfall was in excess of normal recordings for that period.

The catch of food finfish increased 1.5 million pounds (30 percent) above 1960. This increase was due primarily to the poor shrimp season, as the shrimp vessels turned to fishing for finfish to take the place of income usually derived from shrimp fishing. Compared with the previous year, the 1961 landings of flounder increased 74 percent; king whiting, 65 percent; spot, 27 percent; and sea bass, from 29,000 pounds to 324,000 pounds. The tremendous gain in sea bass was attributed to more extensive use of fish pots during the latter part of the year.

Landings of shrimp dropped from 8 million pounds (heads-on) in 1960 to 3.9 million pounds in 1961. There was an increase of approximately 7 cents per pound in the ex-vessel price of shrimp--compensating in only a very small measure for the greatly reduced landings.

The 1961 production of hard clams increased 12 percent compared with 1960. The price held good throughout the year, and there was a ready market for all that could be taken. Landings of hard crabs dropped from 7.1 million pounds in 1960, to 4.7 million pounds, or 34 percent. The oyster fishery had a good year, but production was about 3 percent below that of the previous year. South Carolina oysters were in demand and brought good prices. With the advent of the new wage and hour law, most of the shucking plants laid off large numbers of shuckers.



Trout

SHORTAGE OF AMERICAN-PRODUCED RAINBOW TROUT PREDICTED:

The increase in demand for American-produced rainbow trout has created shortages in many portion sizes, states the U. S. Trout Farmers' Association. The Association is the official legal organization representing a large number of American trout producers located throughout the nation.

One leading United States trout producer reported an increase of over 70 percent in sales volume during March 1962. The Association predicts additional increases in demand due to the fact that more and more eating establishments and food outlets are vigorously promoting quality fishery products and other low fat, polyunsaturated main

dishes. Modern processing, high quality feeds, and rapid shipping--coupled with close proximity to the ultimate consumer--are a few of the factors that have made American-produced rainbow trout popular.



Rainbow trout's high popularity stems from the variety of ways it can be prepared and because it lends itself to a variety of enticing menu descriptions. Another reason for rainbow trout's growing popularity is that the dining public has discovered that trout are the original "all American fish." Being native to the United States, these colorful and fighting game fish helped to feed our country's forefathers as they moved West. A rainbow's coloring actually depicts our Nation's favorite and historic colors as it is characteristically blue on top with silvery white underneath and red stripes or side markings. (April 10, 1962, news release from the U. S. Trout Farmers' Association.)

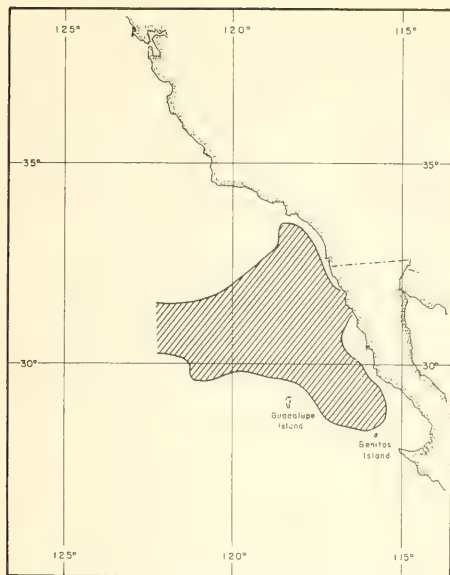


Tuna

ALBACORE CATCH PREDICTION BY U. S. WEST COAST FISHERMEN SOUTH OF INTERNATIONAL BORDER:

This year United States west coast commercial fishermen will catch 18.0 million pounds of albacore tuna from waters south of the International Border between Mexico and the United States, and 5.7 million pounds of bluefin tuna in waters off California. This prediction was made by the San Diego Biological Laboratory of the U. S. Bureau of Commercial Fisheries. It was based on shore temperatures averaged for January through April 1962, and water temperatures and salinities taken in April by the California Cooperative Oceanic Fisheries investigations off the Baja California and southern California coasts.

The albacore fishery is expected to range as far south as Guadalupe Island in June and July. Bureau scientists have not yet found a



Cross-hatched region delineates the area expected to produce about two-thirds of albacore catch in June and July 1962.

means to predict total west coast albacore and bluefin landings.

Since 1945, the albacore catch south of the border has ranged from zero to 26.7 million pounds. The bluefin catch off California for the same period has fluctuated from below a million pounds to 15.6 million pounds.

During the past year the ocean to the west of Baja California and southern California has continued to cool from abnormally high water temperatures in the years 1958 and 1959. This year, temperatures are up to 2° F. cooler than the long-term mean, whereas in 1958 and 1959, temperatures were as much as 6° F. warmer than the long-term average. The years 1958 and 1959 were noted for the complete failure of the southern albacore fishery.

Historical catch records show an inverse relationship between the albacore catch from south of the International Border and the bluefin catch from California waters. We believe this relationship is due to differences in response by the two species to the oceanic en-

vironment. In "cold" years albacore move farther south than usual, resulting in high catches south of the border. In "warm" years bluefin move to the north, giving high catches from California waters. Since this is a "cold" year the center of the bluefin population is expected to remain to the south; we estimate that a below-average bluefin will be taken from California waters.

The estimates of catch may be subject to considerable error because as yet it has not been possible to correct for substantial changes in fishing effort and to anticipate changes that may occur in the ocean environment after the forecast has been made. During the preceding three weeks prior to May 15, the ocean appeared to be warming at a rate faster than normal. This may cause the albacore forecast to be somewhat high and the bluefin forecast somewhat low.

In May 1961 the Bureau Laboratory at San Diego issued its first forecast for the albacore fishery in the eastern Pacific Ocean. The staff predicted that 10.0 million pounds of albacore would be taken from waters south of the International Border between Mexico and the United States and that the fishery would begin farther south than it had in the preceding three years. A preliminary report from the California Department of Fish and Game stated that 8.4 million pounds of albacore were taken from that region in 1961.



United States Fisheries

TRENDS IN 1961:

Per capita consumption of fish in the United States increased to 10.9 pounds in 1961, a half pound more than in the previous year. This increase was divided equally between "fresh and frozen" and canned items.

The supply of domestically-produced fresh and frozen products declined substantially, even though the annual harvest was the Nation's second largest--5.2 billion pounds. Imports were up sharply due to increased receipts of groundfish fillets and blocks, and shrimp. Both edible and non-edible imports established records.

The total amount paid to United States fishermen and vessel owners amounted to \$358 million--nearly \$4 million more than

Apparent Civilian Per Capita Consumption of Fishery Products (Edible Weight), Calendar Years, 1935-39 and 1947-49 Averages, 1959-61 and Preliminary for 1962, with Percentage Comparisons									
Commodity	Preliminary 1/		1960 1/	1959	Average 1947-49	Average 1935-39	1962 as a Percentage of		
	1962	1961					1961	1947-49	1935-39
(Pounds)									
Fresh and Frozen	3/	6.0	5.8	5.9	6.0	5.4	-	-	-
Canned 2/	3/	4.3	4.0	4.2	3.9	4.9	-	-	-
Cured	3/	.6	.6	.6	.6	.7	-	-	-
Total	10.9	10.9	10.4	10.7	10.5	11.0	100	104	99

1/Excludes Alaska and Hawaii.
2/Excludes canned food products containing small quantities of fish, such as clam chowder, etc.
3/Not available.

1/Excludes Alaska and Hawaii.

2/Excludes canned food products containing small quantities of fish, such as clam chowder, etc.

3/Not available.

in 1960, but \$15 million less than the record \$373 million paid in 1958. The average price per pound was 6.94 cents, a low figure due to the record catch (2.3 billion pounds) of low-priced menhaden.

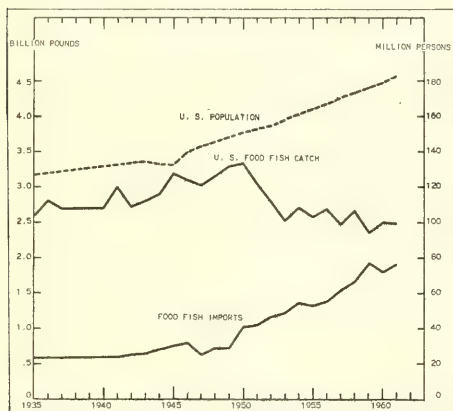
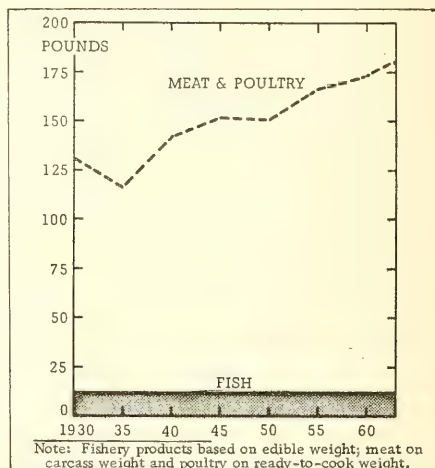


Fig. 1 - Relationship of United States population to food fish catch and imports, 1935-61.

San Pedro, Calif., was the leading United States fishing port in 1961 with respect to both quantity and value of fishery landings. At that port landings amounted to 416 million pounds, with an ex-vessel value of \$36 million. Pascagoula, Miss., was in second place with 354 million pounds; followed by Lewes, Del., 303 million pounds; Reedville, Va., 290 million pounds; Cameron, La., 252 million pounds; and Empire, La., 246 million pounds. All but San Pedro were entirely or principally menhaden ports. New Bedford, Mass., occupied second place in value of landings with \$15 million; followed by Boston, Mass., \$10 million; San Diego, Calif., \$8 million; and Gloucester, Mass., \$6 million.

The 1960 world catch amounted to a record 83.2 billion pounds. Five countries accounted for well over 50 percent of the total



Note: Fishery products based on edible weight; meat on carcass weight and poultry on ready-to-cook weight.

Fig. 2 - United States per capita consumption of fishery products compared to meat and poultry, 1930-1961.

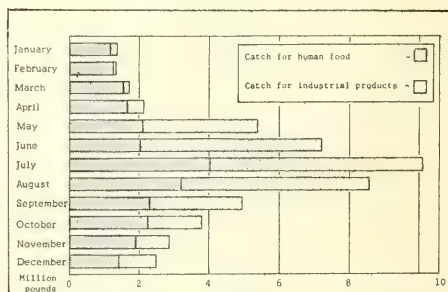


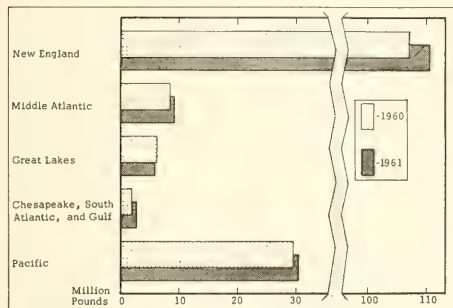
Fig. 3 - United States monthly catch and utilization of fish and shellfish, 1961.

catch--Japan (16.4 percent), China (Mainland) (13.3 percent), Peru (9.4 percent), U.S.S.R. (8.1 percent), and the United States (7.5 percent).

* * * * *

PACKAGED FISHERY PRODUCTS PRODUCTION, 1961:

The production of fresh and frozen packaged fish fillets and steaks in the continental United States during 1961 amounted to 158 million pounds valued at nearly \$52 million to the processors. Compared with 1960, this was an increase in production of 5 million pounds and of \$3 million in value. It was estimated that 449 million pounds of round fish were required to produce the 1960 production.



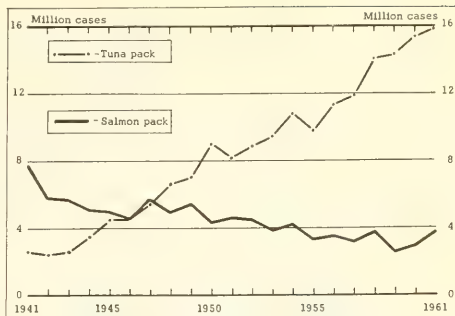
United States production of packaged fish, 1960-61.

Haddock fillets (38 million pounds) and Atlantic ocean perch fillets and steaks (37 million pounds) were the leading items produced in 1961 and accounted for 48 percent of the total volume and 42 percent of the total value. Other important items produced during 1961 were flounder, cod, halibut, and pollock steaks and fillets.

CANNED FISHERY PRODUCTS, 1961:

The pack of canned fishery products in the United States, American Samoa, and Puerto Rico during 1961 amounted to 33 million standard cases (1 billion pounds) valued at \$424 million to the packers. Compared with 1960, this was a 4 percent decrease in production, but an increase of 9 percent in value.

The 1961 pack for human consumption was 48 million pounds and \$41 million higher than in 1960. The gain in both quantity and value was due largely to record packs of tuna and crab meat, and to increased packs of canned salmon, mackerel, and oysters. The value of two items--canned salmon and tuna--accounted for 72 percent of the



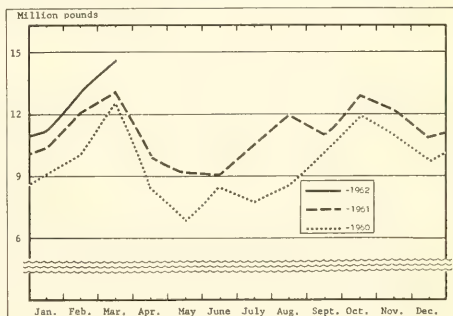
United States pack of tuna and salmon, 1941-61.

total value of canned fishery products to the packers.

The packs of Maine and Pacific sardines, shrimp, and animal food were less than in the previous year.

FISH STICKS AND PORTIONS PRODUCTION, JANUARY-MARCH 1962:

The United States production of fish sticks during the first quarter of 1962 amounted to 20.7 million pounds, while the production of fish portions totaled 18.4 million pounds. This was a gain of 253,000 pounds (1 percent) in fish stick production and 3.4 million pounds (22 percent) in the production of fish portions as compared with the first quarter of 1961.



U. S. production of fish sticks and portions combined, 1960-1962.

Cooked sticks (19.5 million pounds) accounted for 94 percent of the total fish stick

Table 1 - U.S. Production of Fish Sticks by Months and Type, January-March 1962 ^{1/}

Month	Cooked	Raw	Total
	..... (1,000 Lbs.)		
January	5,734	370	6,104
February	6,504	355	6,859
March	7,293	413	7,706
Total 1st Qtr. 1962 ^{1/}	19,531	1,138	20,669
Total 1st Qtr. 1961 .	19,133	1,283	20,416
^{1/} Preliminary.			

Table 2 - U. S. Production of Fish Sticks by Areas, January-March 1962 and 1961

Area	1962 ^{1/}		1961 ^{2/}	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	22	16,398	24	16,589
Inland & Gulf States .	4	2,147	7	1,980
Pacific Coast States .	8	2,124	10	1,847
Total	34	20,669	41	20,416
^{1/} Preliminary. ^{2/} Revised.				

Table 3 - U.S. Production of Fish Sticks by Months, 1958-1962

Month	1962 ^{1/}	1961 ^{2/}	1960	1959	1958
	..... (1,000 Lbs.)				
January	6,104	6,091	5,511	6,277	5,471
February	6,859	7,092	6,542	6,352	5,925
March	7,706	7,233	7,844	5,604	5,526
April	-	5,606	4,871	4,717	4,855
May	-	5,136	3,707	4,407	4,229
June	-	4,938	4,369	4,583	4,702
July	-	3,585	3,691	3,790	4,574
August	-	6,937	5,013	3,879	4,358
September	-	5,216	5,424	5,353	5,328
October	-	6,143	6,560	5,842	5,485
November	-	6,298	6,281	4,831	5,091
December	-	5,628	5,329	4,743	5,467
Total	-	69,903	65,142	60,378	61,011
^{1/} Preliminary. ^{2/} Revised.					

production, while the remaining 1.2 million pounds (6 percent) consisted of raw sticks. A total of 17.8 million pounds of breaded fish portions (of which 14.9 million pounds were raw) and 574,000 pounds of unbreaded portions was processed during the first quarter of 1962.

Table 4 - U. S. Production of Fish Portions by Months and Type, January-March 1962 ^{1/}

Month	Breaded			Unbreaded	Grand Total
	Cooked	Raw	Total		
	(1,000 Lbs.)				
January	945	4,028	4,973	129	5,102
February ...	753	5,359	6,112	262	6,374
March	<u>1</u> /1,234	5,514	6,748	183	6,931
Total 1st Quarter 1962	2,932	14,901	17,833	574	18,407
Total 1st Quarter 1961	2,772	11,751	14,523	513	15,036
1/Preliminary.					

Table 5 - Production of Fish Portions by Areas, January-March 1962 and 1961

Area	1962 ^{1/}		1961 ^{2/}	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	24	10,912	25	9,382
Inland & Gulf States	7	7,046	12	5,257
Pacific Coast States	8	499	6	397
Total	39	18,407	43	15,036
^{1/} Preliminary. ^{2/} Revised.				

Table 6 - U. S. Production of Fish Portions by Months, 1958-1962

Month	1962 ^{1/}	1961 ^{2/}	1960	1959	1958
	..... (1,000 Lbs.)				
January	5,102	4,303	3,632	2,692	1,973
February	6,374	4,902	3,502	3,025	1,254
March	6,931	5,831	4,706	3,225	1,471
April	-	4,507	3,492	2,634	2,268
May	-	3,902	3,253	2,684	1,478
June	-	4,063	3,995	3,247	1,504
July	-	3,986	4,088	2,227	2,161
August	-	4,987	3,558	2,796	1,516
September	-	5,769	4,631	3,558	1,566
October	-	6,783	5,275	4,314	2,560
November	-	5,813	4,790	3,483	1,979
December	-	5,215	4,459	3,262	2,060
Total	-	60,061	49,381	37,147	21,790
^{1/} Preliminary. ^{2/} Revised.					

The Atlantic Coast led all areas in the production of both fish sticks and portions with 16.4 and 10.9 million pounds, respectively. The Inland, Gulf, and Pacific Coast States produced the remaining 4.3 million pounds of fish sticks and 7.5 million pounds of fish portions.

Note: See Commercial Fisheries Review, March 1962 p. 24.

U. S. Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED, MARCH 1962:

During March 1962, a total of 19 vessels of 5 net tons and over were issued first documents as fishing craft as compared with 44 in March 1961. There were 44 documents cancelled for fishing vessels in March--the same as in March 1961.

Table 1 - U. S. Fishing Vessels ^{1/} --Documents Issued and Cancelled, by Areas, March 1962 with Comparisons						
Area (Home Port)	Mar.		Jan.-Mar.		Total	
	1962	1961	1962	1961	1962	1961
Issued first documents ^{2/} : (Number)						
New England	1	2	3	9	33	
Middle Atlantic	1	1	1	1	12	
Chesapeake	1	8	7	12	75	
South Atlantic	3	8	7	11	44	
Gulf	10	9	25	27	103	
Pacific	3	14	15	23	148	
Great Lakes	-	2	-	3	12	
Puerto Rico	-	-	-	2	2	
Total	19	44	58	88	430	
Removed from documentation ^{3/} :						
New England	1	2	6	5	20	
Middle Atlantic	6	8	15	10	32	
Chesapeake	-	6	3	14	28	
South Atlantic	7	3	14	8	29	
Gulf	10	13	29	30	104	
Pacific	15	9	42	26	111	
Great Lakes	2	2	8	4	17	
Hawaii	2	-	3	-	-	
Total	43	43	120	97	341	

^{1/}For explanation of footnotes, see table 2.

Table 2 - U. S. Fishing Vessels ^{1/} --Documents Issued and Cancelled, by Tonnage Groups, March 1962		
Gross Tonnage	Issued ^{2/}	Cancelled ^{3/}
..... (Number)		
5-9	2	9
10-19	7	11
20-29	2	4
30-39	2	3
40-49	2	2
50-59	1	-
60-69	1	-
70-79	3	2
80-89	-	1
100-109	-	1
110-119	-	1
130-139	-	2
140-149	1	1
260-269	-	1
310-319	-	1
Total	19	43

^{1/}Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

^{2/}Includes redocumented vessels previously removed from records. Vessels issued first documents as fishing craft were built: 9 in 1962, 2 in 1961, 1 in 1960, and 7 prior to 1951. Assigned to areas on the basis of their home ports.

^{3/}Includes vessels reported lost, abandoned, forfeited, sold alien, etc.
Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, FEBRUARY 1962:

Imports of fresh, frozen, and processed edible fish and shellfish into the United States in February 1962 were down 5.5 percent in quantity and 10.6 percent in value as compared with the previous month. The decline was due primarily to smaller imports of frozen filets (groundfish and other types), canned tuna in brine, canned sardines, canned salmon, fresh and frozen sea scallops, spiny lobster, and shrimp. The decline was offset partially by more imports of fish blocks, frozen tuna; and frog legs.



Compared with the same month in 1961, imports in February 1962 were up 1.5 percent in quantity and 7.5 percent in value. The general increase came about because of more imports of filets of groundfish (mostly ocean perch and fish blocks), frozen tuna other than albacore, tuna loins and discs, canned sardines in oil, live lobsters from Canada, and shrimp. The increases were offset somewhat by declines in the imports of filets other than groundfish, frozen albacore, frozen salmon from Canada, canned tuna, canned sardines not in oil, canned crab meat, canned lobster meat from Canada, and canned oysters.

In the first two months of 1962 the imports of fresh, frozen, and processed edible fish and shellfish were up 3.0 percent in quantity and 14.7 percent in value as compared with the same period the previous year. The increase in value was due to the higher prices for nearly all imported fishery products. Imports in January-February 1961 were greater for frozen filets (especially fish blocks and ocean perch), frozen tuna, tuna loins and discs, canned tuna, canned sardines in oil, frozen shrimp, fresh and frozen scallops from Canada, and lobster and spiny lobster.

U.S. Imports and Exports of Edible Fishery Products, February 1962 with Comparisons								
Item	Quantity				Value			
	Feb.		Jan.-Feb.		Feb.		Jan.-Feb.	
	1962	1961	1962	1961	1962	1961	1962	1961
.. (Millions of Lbs.) .. (Millions of \$) ..								
Imports:								
Fish & Shellfish:								
Fresh, frozen, & processed ^{1/}	84.0	82.8	173.0	167.9	28.8	26.8	61.0	53.2
Exports:								
Fish & Shellfish:								
Processed only ^{1/} (excluding fresh & frozen)	2.9	4.4	6.4	6.9	1.3	1.9	2.7	3.0
^{1/} Includes pasta, sauces, clam chowder and juice, and other specialties.								

^{1/}Includes pastes, sauces, clam chowder and juice, and other specialties.

United States exports of processed fish and shellfish in February 1962 were down 33.6 percent in quantity and 31.6 percent in value as compared with February 1961. The drop was due to smaller exports this February of canned mackerel, salmon, and sardines not in oil, frozen shrimp, canned shrimp, and shucked oysters.

Compared with the previous month, the exports in February 1962 were down 16.8 percent in quantity and 7.1 per-

cent in value principally because of smaller exports of canned mackerel.

Processed fish and shellfish exports for the first two months of 1962 were down 7.2 percent in quantity and 10.0 percent in value as compared with the same period of 1961. The following products were exported in substantially lesser quantities in 1962: canned salmon, canned sardines not in oil, canned shrimp, and shucked oysters.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

United States imports of tuna canned in brine during January 1-March 31, 1962, amounted to 14,180,044 pounds (about 675,200 std. cases), according to data compiled by the Bureau of Customs. This was 19.9 percent more than the 11,822,619 pounds (about 563,000 std. cases) imported during January 1-April 1, 1961.

United States imports of tuna canned in brine during January 1-April 28, 1962, amounted to 17,049,225 pounds (about 811,900 std. cases). This was 13.0 percent more than the 15,083,873 pounds (about 718,300 std. cases) imported during January 1-April 29, 1961.

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1962 at the 12½-percent rate of duty is limited to 59,059,014 pounds (about 2,812,000 std. cases of 48 7-oz. cans). Any imports in excess of the quota are dutiable at 25 percent ad valorem.



Virginia

CHESAPEAKE BAY FLOUNDER MIGRATION STUDIES:

Biologists from Massachusetts, New York, New Jersey, and Virginia, with the New Jersey Department of Conservation acting as host, met at the New Jersey State laboratory at Island Beach on April 13 to consolidate their findings about the migrations of flounder in the Middle Atlantic area. An Associate Marine Scientist of the Ichthyology Department of the Virginia Institute of Marine Science, Gloucester Point, discussed the movement of flounders from the time they hatch in the ocean until they are caught by fishermen.

"We have collected eggs and larvae of flounders over the continental shelf from

November to March for three years," the scientist reported, "and have followed the migration of young fishes into Chesapeake Bay, up the rivers, and their return to the ocean." Small flounders no more than an inch in length are found in the shallow waters of the York River during late spring.

A graduate student of the Virginia Institute and associated with the Ichthyology Department has been determining the age of flounders in the commercial catch since October 1961. Age is determined by carefully examining the ear stones called otoliths. Each year's growth adds a concentric ring similar to the growth ring on a tree.

The head of the Department of Ichthyology of the Virginia Institute has been processing catch data for the past six years in order to learn trends of the fishery. Another member of the same department has been collecting sport fishing records on the flounder catch.

A crew from the Ichthyology Department has been making monthly surveys for the past several years to gain information about the presence, abundance, and distribution of flounder and other fish in the Chesapeake Bay, and has traced their migration into Chesapeake Bay.

The symposium was called to gather together all regional workers who are interested in the problem and to summarize information which has been gathered. In this way, answers to some questions can be found which an individual state could not obtain because their facilities do not reach beyond state boundaries.

It is hoped that serious gaps in the present knowledge of the flounder will soon be filled in, and that the meeting will be mutually beneficial to representatives of all of the states.

* * * * *

OYSTERS AND RADIOACTIVE WASTE:

At a meeting of the Atlantic Estuarine Research Society held at Morehead City, N. C., the weekend of April 14-15, an Associate Marine Scientist at the Virginia Institute of Marine Science, Gloucester Point, pointed out that one acre of oysters may deposit a ton, dry weight, of silt, clay, and suspended matter in a week's time. This is equivalent to five tons wet weight.

"Should fission particles be present in the waters, they would be attached to clay,

silt, and other suspended material," the scientist stated. "Oysters, barnacles, clams, tunicates, and copepods all ingest this material and eventually deposit it on the bottom." The scientist and his research assistant at the Institute gave a joint paper entitled, "Bio-deposition by Filter Feeding Marine Organisms as a Process in Concentrating Radioactive Wastes into Bottom Deposits." The paper states that there are many sources of radiation contamination such as, disposable low-level wastes from experimental uses (hospitals, therapeutic uses, etc.), nuclear power plants, maritime reactors, fallout from nuclear testing, and the possibility of contamination from nuclear accidents.

"What would be the ultimate fate of radioactive materials once introduced into marine waters?" the scientist asked. The laboratory work he is doing is under the direction of the head of the department of basic ecology-pollution at the Institute. They are concerned with the absorption (sticking) of radionuclides to suspended materials in the water, especially clay. Work completed thus far indicates that the higher the salinity the lower the absorption of fission products. Apparently radioactive material is not stripped off of clay particles as it passes through the digestive tract of marine animals. One of the next problems to be attacked is to learn how permanent the sediments of the deposits from these marine animals are.

A graduate student at the Virginia Institute gave a paper on the age and size of *Urosalpinx cinerea*, the screw borer or oyster drill, at the onset of maturity in the lower York River. He reported that these smooth oyster drills are sexually mature when only half an inch long. Few drills grow to be more than one inch long in the York River. On the Eastern Shore of Chesapeake Bay they frequently reach a length of two inches and are highly destructive to oysters in the high salinity waters throughout Virginia.

The membership of the Atlantic Estuarine Research Society consists of 166 scientists who conduct research in marine waters along the Atlantic Coast.

FISHERY LANDINGS, 1961:

Landings of fish and shellfish at Virginia ports during 1961 amounted to 400,8 million

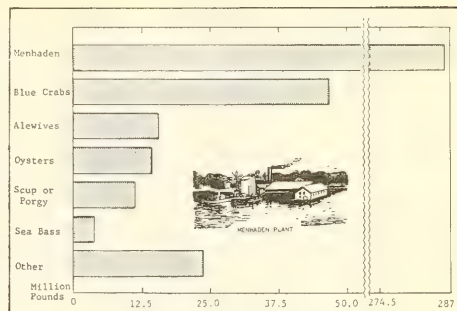


Fig. 1 - Virginia landings of certain species, 1961.

pounds valued at \$20.5 million. Compared with 1960, this was a gain of 9 percent in quantity, but a drop of 2 percent in value. The catch of menhaden accounted for 72 percent of the 1961 total catch, while oysters accounted for 52 percent of the total value.

The virtually constant \$20 million value of the Virginia catch in recent years could be offered as proof that Virginia's fisheries have been static for a good many years. There may be noteworthy changes occurring within individual fisheries, but they seldom qualify as major trends. There has been some automation over recent years as in the cases of menhaden fishing and unloading and, to a lesser extent, in oyster steaming. On the whole, handwork remains essential throughout the industry. Wages have risen slowly over the years, and a laborer might count on a moderate livelihood only if employment was steady.

Fishery employment--both afloat and ashore--was a little below the previous year's total, but the total working time was less than last year.

The drop in the oyster landings which began in 1960, continued at an accelerated pace into 1961. However, as the year progressed, the decline tapered off, and the total landings were only about 7 percent below 1960. Despite the lower landings, a price rise resulted in oyster fishermen and vessel owners realizing nearly \$600,000 more than in the previous year.

Seed oysters are an important part of the Virginia fishing industry. The 1961 catch of seed oysters from public grounds amounted

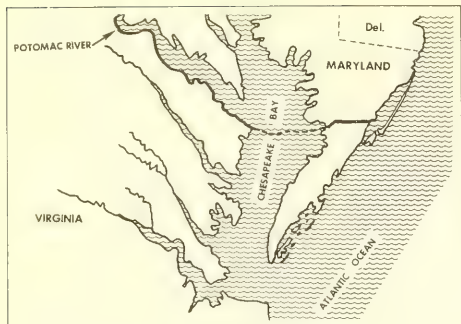


Fig. 2 - Virginia fishing areas.

to 1.5 million bushels and added nearly \$1.3 million to tongsers' income.

Hard crab landings were near an all-time high. The winter-dredge and the summer-pot fisheries were both quite productive. More than 45 million pounds valued at nearly \$2 million were landed. Soft crabs and peelers were also in good supply.

After the depressing factors that slowed down the menhaden industry the previous year, the 1961 season returned almost to normal. Even so, one of the five processing plants remained closed. The total menhaden catch for reduction was 277.3 million pounds. The adversities of a highly competitive market compelled at least one processor to investigate new products, with the result that a plant food made from solubles was successfully placed on the market. Other products, such as pet food and fish flour, or fish protein concentrate are under serious consideration by industry members.

Hard clam fishing changed very little from the previous year. The soft clam fishing remained dormant. Clam fishing in Virginia lacks the sharp ups and downs that beset so many other segments of the fisheries. Production and prices of hard clams held fairly steady.



Wholesale Prices

EDIBLE FISH AND SHELLFISH, APRIL 1962:

The usual seasonal increase in landings occurred in April throughout the country and prices declined seasonally 1,2

percent from March. But the April 1962 wholesale price index for edible fishery products (fresh, frozen, and canned) at 118.9 percent of the 1957-59 base was 17 percent higher than in the same month of 1961. There wasn't a single fishery product included in the index that didn't bring higher prices this April than in the same month a year earlier.

Seasonally heavier landings of fish in New England ports, principally haddock, were responsible for the drop of 2.2 percent in the drawn, dressed, or whole finfish subgroup index from March to April. But prices for the subgroup this April still were 23.9 percent higher than in the same month of 1961. A drop of 26.1 percent in the ex-vessel price of large haddock at Boston was almost offset by the substantially higher prices for halibut and fresh-water fish. The Jewish holiday trade and the fact that supplies were light caused the higher prices for the more popular fresh-water varieties like whitefish and yellow pike. The market was strong throughout most of April for all the products in this subgroup.

Prices for processed fresh fish and shellfish dropped 2.3 percent from March to April. Seasonally heavier supplies were responsible for the 25-percent drop in the price of fresh haddock fillets at Boston. In the same period shucked oyster production was light as dealers processed just enough to satisfy the limited end-of-season demand, and prices remained steady at the March level. But compared to a year earlier, prices this April for all the products in the subgroup were up 17.5 percent. Prices for fresh haddock fillets were up 41.5 percent, fresh shrimp at New York City up 26.1 percent, and shucked oysters at Norfolk up 7.0 percent.



Breaded shrimp is packed in cartons prior to freezing in a shrimp-breeding plant located in Brunswick, Ga. Packed boxes on center belt conveyor are carried to weigher.

Frozen fishery products moved well in April. Markets were steady to firm for most of the major products, and some shortages were reported for halibut, ocean perch fillets, and whiting. Small quantities of new-season halibut helped to alleviate the shortage slightly for that product. Markets continued strong for frozen shrimp as supplies remained short. The frozen processed fish and shellfish subgroup index for this April was down 0.9 percent from March because prices dropped for fillets of haddock and ocean perch; but prices for shrimp were slightly higher. The April index for the subgroup was 21.8 percent higher than in the same month of 1961, with prices up 2.6 percent for frozen flounder fillets, up 3.1 percent for haddock fillets, up 13.9 percent for ocean perch fillets, and up 36.8 percent for frozen shrimp at Chicago.

Canned fishery products prices remained at the same level from February through April. But the index for the subgroup this April was 10.5 percent higher than a year earlier. Compared to April 1961, prices this April were up 1.8 percent for canned pink salmon, up 10.4 percent for

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, April 1962 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes 2/ (1957-59=100)			
			Apr. 1962	Mar. 1962	Apr. 1962	Mar. 1962	Feb. 1962	Apr. 1961 ^{3/}
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					118.9	120.3	119.7	101.6
Fresh & Frozen Fishery Products:					117.2	119.4	118.5	97.0
Drawn, Dressed, or Whole Finfish:					119.1	121.8	118.6	96.1
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.12	.16	91.6	124.0	107.4	43.0
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.45	.40	133.1	116.8	117.3	98.6
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.86	.86	120.5	120.5	120.5	118.8
Whitefish, L, Superior, drawn, fresh	Chicago	lb.	.85	.75	126.9	111.9	115.7	68.6
Yellow pike, L, Michigan & Huron, rnd., fresh	New York	lb.	.85	.74	133.2	120.4	120.4	83.5
Processed, Fresh (Fish & Shellfish):					120.4	123.2	125.4	102.5
Fillers, haddock, sml., skins on, 20-lb. tins.	Boston	lb.	.38	.50	91.1	121.4	109.3	64.4
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.99	1.00	116.0	117.2	123.1	92.0
Oysters, shucked, standards	Norfolk	gal.	7.75	7.75	130.7	130.7	130.7	122.2
Processed, Frozen (Fish & Shellfish):					108.0	109.0	107.7	88.7
Fillers: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.40	.40	100.1	100.1	100.1	97.8
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.33	.35	96.7	101.1	96.7	93.8
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.33	.34	115.7	119.2	119.2	101.6
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.95	.95	112.7	112.1	112.1	82.4
Canned Fishery Products:					122.1	122.1	122.1	110.5
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	28.50	28.50	124.2	124.2	124.2	122.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	12.15	12.15	107.9	107.9	107.9	97.7
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	5.25	5.25	118.5	118.5	118.5	101.5
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	12.81	12.81	164.3	164.3	164.3	112.2

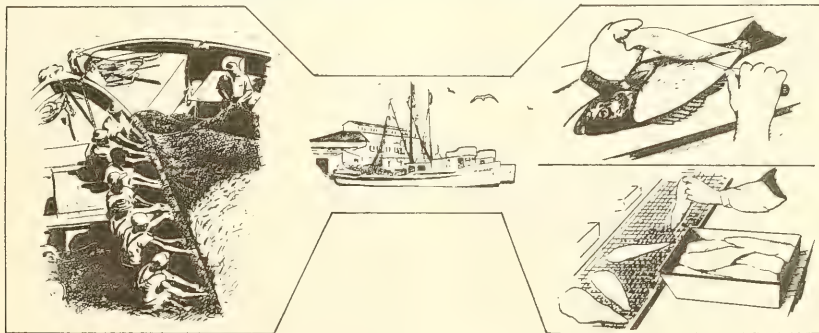
1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/ Beginning with January 1962 indexes, the reference base of 1947-49=100 was superseded by the new reference base of 1957-59=100.

3/ Recomputed to be comparable to 1957-59=100 base indexes.

canned tuna, up 16.7 percent for California sardines, and up 46.4 percent for Maine sardines. The canned tuna pack this year was only slightly less than last year at the end of April, but less light meat and more white meat was packed the first four months of this year. A substantial drop in do-

mestic landings of yellowfin tuna in California curtailed the pack of light meat tuna. Through April the pack of Maine sardines was very light and the available stocks had practically been sold out by the end of April. The 1961/62 season pack for California sardines was again a small one.





FOREIGN

International

UNESCO INTERGOVERNMENTAL
OCEANOGRAPHIC COMMISSION

CONSULTATIVE COMMITTEE MEETS IN PARIS:

The consultative committee of the UNESCO Intergovernmental Oceanographic Commission met in Paris, France, April 10-12, 1962. The meeting was attended by a United States delegation.

The consultative committee was established at the First Session of the Intergovernmental Oceanographic Commission in October 1961 for the purpose of working with the Bureau and Secretariat of the Commission in the development of the Commission's program during the period between Sessions.

NORDIC CONTACT COMMITTEE FOR FISHERIES

ESTABLISHMENT OF COMMITTEE:

Nordic fisheries matters will be coordinated by a Nordic Contact Committee in the future, if member governments approve one of the recommendations made by the Nordic Council at its 10th session in Helsinki March 17-23, 1962. The proposal by the Danish Government which was adopted without change reads:

"The Council recommends to member governments that a permanent Nordic Contact Committee for Fisheries Matters be established. The purpose of this Committee will be to follow developments and to consider concrete problems concerning fishing in the Nordic countries as well as problems of marketing between two countries or in third countries. In addition, the Committee should be able to consider other problems of common interest which arise. The Committee should consist of representatives of the Government authorities in the Nordic countries and a corresponding number of representatives of the fishing organizations. The Committee should assemble whenever an initiative to this effect is presented by representatives of the Government authorities or fisheries organizations in one of the countries."

In its report on the Danish proposal the Economic Committee of the Nordic Council stated that the purpose in establishing this permanent fisheries committee was to provide a forum for continued contact among the Nordic countries on fisheries questions. It said that such a committee would bridge the gap between the biennial Nordic fisheries conferences and make the work of these conferences more effective.

In other fisheries matters, the Nordic Council postponed consideration of a joint Finnish-Icelandic-Nordic-Swedish Government proposal regarding cooperation in fisheries problems and a proposal from the 8th session (1960) regarding fishing limits. (United States Embassy, Helsinki, report of March 28, 1962.)

ATOMIC-PROPELLED MARINE RESEARCH VESSEL

The proposed nuclear-propelled marine research vessel, to be built in France, was discussed at a recent meeting in the Hague, along with proposals for a Swedish bulk carrier and a Dutch tanker, by an Evaluation Group on Nuclear Ship Propulsion established by the European Nuclear Energy Agency (ENEA) of the OECD. The marine research vessel was reported to be 361 feet in length with 7,000 shaft h.p. The Danish expert on the study group said at the Hague there was discussion as to whether the vessel should be constructed to withstand ice, the opinion being that if this were done it could not be constructed with a well. The vessel is designed by shipbuilders in LeHavre, France, designers and constructors of the French marine research vessel *Thalassa*.

Proposals for the three types of vessels are being referred to an ENEA Study Group for Nuclear Ship Propulsion which will choose only one of the three to be built (April 6, 1962, report from the Regional Fisheries Attache, United States Embassy, Copenhagen.)

Note: Also see Commercial Fisheries Review, May 1962 p. 42, March 1962 p. 35.



Canada

DOGFISH LIVER SUBSIDY PROGRAM FOR 1961/62 ENDED:

Canada's 1961/62 dogfish liver subsidy program on the West Coast was terminated on March 31, 1962. Total deliveries under the extended subsidy program, which was reintroduced on March 6, amounted to 81,600 pounds. This brought total purchases of dogfish livers in the 1961/62 fiscal year (ending March 31) to 1,228,500 pounds, and the total subsidy payments to C\$147,421.

The Canadian Department of Fisheries on March 7, 1962, announced that the dogfish liver subsidy program had been extended

Canada (Contd.):

to allow for the take up of the remaining \$12,000 left in the subsidy allocation for the fiscal year 1961/1962.

A total of C\$150,000 was earmarked by the Government to cover the subsidy program for the fiscal year ending March 31, 1962. Under the program, 12 cents per pound was paid for dogfish livers. The Department had terminated the program on November 6, 1961, as it looked like all the funds available for the program had been expended.

BRITISH COLUMBIA FISHERY TRENDS, 1961:

In comparison with the 1960 season, Canada's British Columbia fishing industry in 1961 enjoyed a banner year. The landed value of all fish and fish products for the first ten months of 1961 was 45 percent higher than for a like period in 1960. However, as 1960 was an extremely poor year for the industry, the increase was not quite so significant. An excellent salmon run was largely responsible for the increase in the total landed value.

Halibut landings in 1961 dropped from those in 1960, but brought higher prices; the landed value of the catch was higher than that of 1960. Canadian prices were generally higher than those in United States ports.

The price weakness in herring oil and meal continued to depress that segment of the industry, although herring landings in 1961 were up over those of 1960. The herring fleet, unable to sail for most of 1960 due to overproduction and poor prices, resumed fishing in late 1960.

For the first seven months of 1961, exports through British Columbia customs ports of fish, marine animals, and fish products were valued at C\$10 million dollars, a drop of \$1.5 million from the same period in 1960. A drop in exports to the United Kingdom was largely responsible for the decline. (United States Consulate, Vancouver, report of March 22, 1962.)



Denmark

FISH FILLETS AND BLOCKS AND FISHERY INDUSTRIAL PRODUCTS EXPORTS, FEBRUARY 1962:

Denmark's exports of fresh and frozen fillets and blocks during the first two months of this year were 9.6 percent or almost 1.1 million pounds greater than in the same period of 1961. The exports of cod and related species dropped 15.3 percent, but flounder and sole fillets were up 15 percent and herring fillets were up 89.3 percent. During the first two months this year exports to the United States of fresh and frozen fillets and blocks of 1.6 million pounds (mostly cod and related species) were down 8.2 percent from the exports of almost 1.8 million pounds in the same period of 1961.

Denmark's exports of fresh and frozen fish fillets and blocks during February 1962 were up 14.5 percent or 0.9 million pounds. Of the total exports, almost 1.4 million pounds (mostly cod and related species) were shipped to the United States in February. The United States was the leading buyer in February followed by the United Kingdom.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks and Fishery Industrial Products, February 1962 ^{1/}				
Product	February		Jan.-Feb.	
	1962	1961	1962	1961
	..... (1,000 Lbs.)			
Fillets and Blocks:				
Cod and related species	3,538	4,051	5,385	6,356
Flounder and sole	1,601	1,291	3,487	3,033
Herring	2,239	1,083	3,524	1,862
Other	51	63	87	136
Total	7,429	6,488	12,483	11,387
	..... (Short Tons)			
Industrial Products:				
Fish meal, fish solubles, and similar products	3,470	1,992	6,852	5,182

^{1/}Shipments from the Faroe Islands and Greenland direct to foreign countries not included.

Denmark's exports of fish meal, fish solubles, and similar products in January-February 1962 were up 32.2 percent or 1,670 tons from the same two months a year earlier.

During February 1962, Denmark exported 74.2 percent or 1,478 metric tons more meal, fish solubles, and similar products than in the same month of 1961. The principal buyers were West Germany and the United Kingdom.

SHARK INDUSTRY AND EXPORT MARKET:

There is no domestic market for sharks and dogfish in Denmark because they are not favored as a food fish. Practically all of the Danish catch is exported, fresh or frozen, to other European countries.

Although Denmark is not a market for sharks or dogfish, there is a small annual catch for export, either fresh or frozen. A small amount of dogfish is smoked for local consumption.

Herring shark and piked dogfish catches brought average ex-vessel prices of 3.39 kroner per kilo (22.3 U.S. cents a pound) and 0.86 kroner per kilo (5.7 cents a pound), respectively, in 1961. The export value of herring sharks in 1961 averaged 3.68 kroner a kilo (24.2 cents a pound) for fresh and 4.12 kroner a kilo (27.1 cents a pound) for frozen.

The Danish market uses sharks or dogfish as food only in insignificant amounts, so there is little chance a substantial market could be created in that country.

Denmark (Contd.):

Danish Landings, Value, and Exports of Sharks and Dogfish, 1961

Item	Herring Shark or Forbeagle ^{1/}			Piked Dogfish ^{2/}		
	Qty.	Value		Qty.	Value	
	Metric Tons	1,000 Kroner	US\$ 1,000	Metric Tons	1,000 Kroner	US\$ 1,000
Landings	425	1,443	209	191	165	24
Exports:						
Fresh--to:						
Italy	378	1,401	203	-	-	-
West Germany	15	48	7	-	-	-
Other ^{3/} . . .	7	25	4	-	-	-
Total fresh . .	400	1,474	214	-	4/-	-
Frozen--to:						
Italy	82	338	49	-	4/-	-
1/Lamna cornubica.						
2/Acanthias vulgaris.						
3/Individual countries not available in 1961, but in 1960 Belgium-Luxembourg, Switzerland, and Sweden imported almost 4 tons from Denmark.						
4/Quantities of piked dogfish exported were so small they were lumped in an "Other" category and unavailable as to amount or value.						

Herring sharks are taken in the North Sea and Skagerrak mostly by vessels fishing with long lines. Dogfish are taken incidentally in trawls and Danish seines. There is a fishery for mackerel sharks in the Northwest Atlantic off the New England and Canadian coasts by a Faroese company utilizing three vessels. The sharks are frozen on board and sold in Italy under a current contract amounting to about \$580,000. (Report of April 5, 1962, from the Regional Fisheries Attache, United States Embassy, Copenhagen.)



Fiji Islands

LATEST DEVELOPMENTS ON TUNA BASE PROPOSED BY JAPAN:

Japanese Diet member Tetsuzo Matsuda's plan to establish a large tuna fishing base at Levuka, Fiji Islands, was severely criticized by the Japanese fishing industry when it was first publicized, the Japanese periodical *Shin Suisan Shimbum* of April 23, 1962, reported. Criticism was directed, for example, at Matsuda's plan to utilize 60-ton vessels and to exempt those vessels from licensing requirements. However, the Japanese tuna industry now seems to be much less critical of the Matsuda Plan, and this can be ascribed to the announcement made by Minister of Agriculture and Forestry Kono that the 60-odd fishing vessels displaced from the salmon fishery this year would be diverted to tuna fishing in the South Pacific Ocean.

Reportedly, Diet member Matsuda, who is presently serving as advisor to the South Pacific Ocean Fisheries Cooperative Association, which is scheduled to manage the tuna base at Levuka when it is established, is willing to stake his political future on the success of his plan, and was scheduled to depart for the Fiji Islands on April 27 to conduct further discussions with Fijian authorities.

The Japanese periodical pointed out that it is not yet known whether the Fiji Islands tuna base plan includes operation of displaced Japanese salmon vessels, and, if so, whether those vessels are to be exported to the Fiji Islands, in which case they would not be subject to Japanese fishery laws. The only control the Fisheries Agency would then be able to exercise over them would be to designate port of landing and to regulate export quotas.

The periodical added that the large United States tuna packers have become interested in the Matsuda Plan. United States tuna packers are searching for new sources of tuna and are said to be seeking tuna bases in the South Pacific

Ocean and in Southeast Asia, and one of them has already approached Japanese industry members for complete details of the Matsuda Plan.

Apparently, tuna exports to the United States from the Fiji Islands base, if established, are to be handled by an Osaka trading firm whose executive director was formerly an official of the Fisheries Agency and more recently was connected with a marine products trading firm. The Osaka trading company is a dry goods specialty firm and has maintained an office in the Fiji Islands since the end of World War II.

A large Japanese marine products trading firm is also reported to be involved in the Matsuda Plan, and a large United States tuna packer reportedly is seeking arrangements with the marine products firm and the Osaka trading company to purchase tuna landed at the Levuka base.

In the final analysis, reported the *Shin Suisan Shimbum*, the Matsuda Plan seems to have gained momentum as a result of a series of developments, beginning with an acute worldwide shortage of tuna, which the commercial firms were quick to sense and to act upon, and a strong demand for tuna in the United States. In this connection, the problem of diverting to some other fishery the many Japanese fishing vessels to be displaced from the salmon fishery this year served to focus attention on the South Pacific tuna fishery.



Iceland

UTILIZATION OF FISHERY LANDINGS, 1960-61:

How Utilized	1961	1960
	. . . (Metric Tons) . . .	
Herring ^{1/} for:		
Oil and meal	225,673	103,547
Freezing	25,259	9,771
Salting	68,068	21,834
Fresh on ice	6,797	1,286
Canning	114	-
Groundfish ^{2/} for:		
Fresh on ice landed abroad . . .	33,115	27,784
Freezing and filleting	144,789	200,032
Salting	68,819	74,866
Stockfish	47,583	56,098
Home consumption	8,389	8,636
Oil and meal	3,708	6,580
Shellfish for:		
Freezing: Lobster	1,490	1,974
Shrimp	1,062	998
Canning (shrimp)	323	338
Total production	635,189	513,744
1/Whole fish.		
2/Drawn fish.		

FISHERY LANDINGS BY PRINCIPAL SPECIES, 1960-61:

Species	1961	1960
	. . . (Metric Tons ^{1/}) . . .	
Cod	193,130	243,396
Haddock	41,088	33,716
Saithe	11,847	10,236
Ling	5,180	5,411
Wolfish (catfish)	1,793	8,629
Cusk	5,069	7,027
Ocean perch	26,963	55,859
Halibut	1,700	1,680
Herring	325,911	136,438
Shellfish	2,875	3,311
Other	9,633	8,041
Total	635,189	513,744
1/Except for herring which are landed round all fish are drawn weight.		

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Ireland

FISH FARMS TO PRODUCE RAINBOW TROUT FOR EXPORT:

Fish farms on an extensive scale to produce rainbow trout for export are being set up near Cahirciveen, Kerry County, Ireland, by a businessman of Skagen, Denmark, who has wide interests in the Danish fishing industry.

Announcing the new Kerry industry, the Industrial Development Authority said in Dublin that a new firm is completing a hatchery on the Finglas River in Kerry and expects to have the first fish farm on the Comeragh River completed ahead of schedule by mid-summer 1962.

In addition, Kerry farmers will be encouraged to set up their own trout farms and sell the fish to the new company in Cahirciveen to process for export. A cold-storage plant for trout and salt-water fish will also be built at Renard Point, Cahirciveen.

A Danish fishing expert has been in Ireland for some time working on the project. The Danish businessman said he chose Kerry as its clear fresh streams were particularly suitable for raising trout. (The Fishing News, March 23, 1962.)



Italy

DUTY-FREE FROZEN TUNA IMPORT QUOTA SET:

The Japanese Foreign Ministry's special envoy stationed in Italy reports that Italian tariff regulations on frozen tuna imports reportedly have not yet been formally documented. However, according to information he has obtained from Italian officials, frozen tuna imported into Italy on and after January 1, 1962, will be admitted free of duty up to a total of 25,000 metric tons, of which Japan's quota will be 14,000 metric tons. Imports over and beyond the 25,000-ton quota will be dutiable at the rates of 7.5 percent for tuna used for canning purposes and 20.1 percent for tuna sold to the fresh fish trade.

Of the total duty-free import quota of 25,000 tons, the 11,000 tons which remain after deducting Japan's allocation of 14,000 tons may partly be allocated to Japan should the quan-

tity of frozen tuna exports to Italy by other countries be very small. (Suisan Keizai Shim-bun, April 10, 1962.)

IMPORT DUTY ON FISH AND SHELLFISH MEAL REDUCED

The Italian Ministry of Finance, in Circular 5472 of December 23, 1961, reduced the import duty to 5 percent ad valorem for consignments from all sources for flour and meals of fish, crustaceans, or molluscs, not for human consumption (subheading No. 23.09-B of the new Italian tariff), according to the British Board of Trade Journal of March 16, 1962.



Japan

LOWERING OF UNITED STATES TARIFF ON CANNED TUNA IMPORTS SOUGHT:

The Japan Canned Tuna Packers Association submitted a request on April 15, 1962, to the Japanese Fisheries Agency Director that prudent measures be taken to seek the lowering of United States tariff rates on canned tuna imports. According to Japanese periodical Suisan Keizai Shim-bun of April 26, 1962, the Association contends that Japanese exports of frozen tuna to the United States can be expected to increase in the future because a catch limit of 83,000 tons of yellowfin tuna would be placed on the eastern Pacific yellowfin fishery if the United States Congress acts favorably on a bill being considered, and this quota falls far short of United States domestic demand for tuna. However, imposition of a high tariff on imports of canned tuna by the United States is stifling expansion of Japanese exports of that product, the Japanese periodical reported.

Several moves have been made by Japan to seek the lowering of United States tariffs on canned tuna imports. This matter was submitted for Government consideration by the Japanese tuna industry at the recent conference on export promotion measures (Agriculture and Marine Products Export Council meeting held on March 20), and the Japanese Government is expected to take some kind of action on the industry's recommendation. It was also discussed in fall of 1961 between Japanese Agriculture and Forestry Minister Kono and United States Secretary of the Interior Udall at the Japan-United States Economic Trade Council meeting held at Hakone, Japan. Also, Kono wrote a letter to Secretary Udall in an effort to promote exports of canned tuna to the United States.

Minister Kono had hoped to discuss promotion of Japanese canned tuna for export to the United States at the May meeting of the Japan-United States Economic Trade Council, but the United States is reported to hold some differences of opinion concerning the placing of this subject on the agenda. Thus, reaction of the Japanese Government to industry's latest request to seek the lowering of the United States tariff on canned tuna imports is being followed attentively by the Japanese tuna industry.

Japan (Contd.):

FIFTH SALE OF CANNED TUNA IN BRINE FOR EXPORT TO THE UNITED STATES:

The Japan Canned Foods Exporters Association announced early in April 1962 that a total 230,000 cases of canned tuna in brine for export to the United States was to be offered at the fifth canned tuna sale, consisting of 130,000 cases of white meat tuna and 100,000 cases of light meat tuna. Deliveries were to be completed by June 15, 1962.

Japanese Sales of Canned Tuna in Brine For Export to U. S., 1962

Product	Sale Number					
	Fifth	Fourth	Third	Second	First	Total
	..... (1,000 Cases)					
Tuna:						
White meat . .	130	130	100	130	130	620
Light meat . .	100	70	80	130	100	480
Total . . .	230	200	180	260	230	1,100

Export prices were the same as for the first four sales--\$9.95 per case (No. $\frac{1}{2}$, 7-oz., 48's) f.o.b. Japan for white meat tuna and \$7.70 per case (No. $\frac{1}{2}$, 7-oz., 48's) f.o.b. Japan for light meat tuna. (Suisan Tsushin, April 12, 1962.)

* * * * *

EXPORTS OF CANNED TUNA IN OIL, FY 1961:

Japanese canned tuna in oil approved for export in fiscal year 1961 (April 1961-March 1962) to countries other than the United States and Canada totaled 1,513,395 actual cases, according to data compiled by the Export Canned Tuna Packers Association. This was an increase of 429,579 cases over FY 1960 (April 1960-March 1961), when exports totaled 1,083,816 cases; and 36,279 cases over FY 1959, when exports totaled 1,477,116 cases.

White meat tuna comprised 20 percent of total exports, amounting to 306,617 cases. Light meat tuna totaled 1,206,778 cases, or 80 percent, of which yellowfin comprised 145,500 cases, or 10 percent; big-eyed 762,766

Exports of Japanese Canned Tuna in Oil, FY 1961 with Comparisons

Principal Countries of Destination	FY 1961	FY 1960	FY 1959
	... (No. of Actual Cases), ...		
West Germany	660,025	438,906	484,808
Canada	206,535	151,754	160,385
Netherlands	122,670	62,999	85,863
Switzerland	87,581	63,573	36,918
Belgium	58,759	53,197	92,360
England	54,662	18,489	105,135
Saudi Arabia	48,240	-	-
Lebanon	45,494	70,260	114,744
Aden	44,914	-	-
Syria	38,239	-	-
Kuwait	27,391	-	-
Malta	23,386	-	-
Austria	22,602	-	-
Egypt	18,426	-	-
Italy	-	15,337	26,584

cases, or 50 percent; and skipjack 298,512 cases, or 20 percent. (Suisan Keizai Shimbun, April 13, 1962, and Suisan Tsushin, April 24, 1961.)

* * * * *

FROZEN TUNA EXPORTS IN FY 1961:

Data compiled by the Japan Frozen Foods Exporters Association reveal that frozen tuna approved for export in FY 1961 (April 1961-March 1962) to the United States and Canada totaled 93,730 short tons, compared to 76,591 tons in 1960 (April 1960-March 1961). Exports of frozen tuna loins totaled 4,500 short tons, of which albacore loins made up 1,257 tons, yellowfin loins 3,066 tons, and other tuna loins 177 tons.

Frozen tuna approved for export to Europe in FY 1961 totaled 33,855 metric tons, or 6,185 tons less than in FY 1960. (Suisan Tsushin, April 5, 1962.)

Table 1 - Japanese Frozen Tuna Exports to the United States and Canada, FY 1961 with Comparisons

Species	Direct Shipments		Trans-shipments		Total	
	FY 1961	FY 1960	FY 1961	FY 1960	FY 1961	FY 1960
	..... (Short Tons)					
Albacore	27,744	23,943	16,138	7,912	43,882	31,855
Yellowfin	32,989	26,934	12,635	17,375	45,624	44,309
Big-eyed	669	70	-	-	-	-
Skipjack	582	71	2,925	-	4,224	427
Bluefin	48	286	-	-	-	-
Total	62,032	51,304	31,698	25,287	93,730	76,591

Table 2 - Japanese Frozen Tuna Exports to Europe and Africa, FY 1961 with Comparisons

Country of Destination	Quantity	
	FY 1961	FY 1960
	..... (Metric Tons)	
Italy	21,639	22,414
Yugoslavia	7,293	11,364
Czechoslovakia	1,776	-
Tunisia	636	606
Libya	585	732
Spain	699	-
Others	1,227	4,924
Total	33,855	40,040

* * * * *

FROZEN TUNA TO BE EXPORTED TO CZECHOSLOVAKIA:

Two Japanese trading firms recently concluded an agreement with a Czechoslovakian Government agency to export to Czechoslovakia 600 metric tons of frozen albacore and big-eyed tuna, to be delivered by mid-April 1962. The frozen tuna were to be delivered to the port of Hamburg at \$340 per metric ton for albacore and \$310 per metric ton for big-eyed tuna. Of the total shipment of 600 tons, one of the Japanese firms handled 400 tons and the other firm 200 tons. (Shin Suisan Shimbun Sokuho, April 6, 1962.)

Japan (Contd.):

Editor's Note: In April 1961, two other large Japanese fishing companies initially entered into an agreement with Czechoslovakia to export a total of 1,050 metric tons of Atlantic Ocean frozen tuna, marking the beginning of tuna trade between Japan and Czechoslovakia. Price of that shipment was at \$285 a metric ton, species unidentified, delivery Hamburg, and in payment Japan was to receive barter goods. Deliveries were completed by early fall, and in September 1961 Czechoslovakia sought to import additional tuna.

Export statistics compiled by the Japan Frozen Foods Exporters Association reveal that in FY 1961 (April 1961-March 1962), frozen tuna exports to Czechoslovakia totaled 1,776 metric tons, and Czechoslovakia now ranks as the third largest European importer of Japanese frozen tuna.

JAPANESE FISHERIES AGENCY DESIGNATES PENANG AND SINGAPORE AS TUNA TRANSSHIPMENT BASES:

On April 18, 1962, the Japanese Fisheries Agency officially designated the ports of Penang (Malaya) and Singapore as transshipment bases for Indian Ocean-caught tuna. Earlier, on March 22, the Export Frozen Tuna Producers Association had designated these two ports as transshipment bases. The Agency also announced that it had approved the application of the Japanese company, which operates the joint tuna packing plant located at Penang, to land at Penang 6,000 short tons of fresh tuna for freezing and transshipment to the United States. It also authorized a quota of 4,000 short tons of Indian Ocean frozen tuna for transshipment to the United States from either Penang or Singapore. No limits are being placed on landing tuna at Penang or Singapore for shipment to Japan.

Following the announcement by the Fisheries Agency, a number of tuna vessels were reported to be making preparations to depart for Penang, which they would use as a base port to fish in the Indian Ocean. They include the vessels *Seiju Maru* No. 8 (800 gross tons), *Zuiho Maru* No. 11 (180 gross tons), *Kompira Maru* No. 1 (240 gross tons), *Kinei Maru* No. 3 (226 gross tons), and the *Tenjin Maru*, *Hoko Maru* No. 32, and the *Kotoshiro Maru*, the last three vessels being under 200 tons gross each. The *Seiju Maru* is to serve as a freezer ship (freezing capacity, 22 metric tons per day), and ice-carrying fishing vessels based at Penang are to deliver their catches to the *Seiju Maru* or to the Penang base, which has a unit capable of freezing 7.5 metric tons per day. Fresh tuna which cannot be handled by either the *Seiju Maru* or the Penang cold-storage plant are to be processed for canning by the packing plant at Penang.

Reportedly, the Japanese firm operating the Penang plant will soon apply for a loan of about 100 million yen (US\$277,780) from the Overseas Economic Cooperative Fund to enlarge the company's cold-storage facilities at Penang. Present holding capacity of the cold-storage



plant is about 200 metric tons. The company hopes to increase the holding capacity an additional 150 metric tons, to 350 metric tons. The company does not immediately plan to enlarge its 7.5-ton capacity freezing unit, although it plans to do so in the future when the necessity arises. (Suisan Tsushin, April 20; *Shin Suisan Shimbun* Sokuho, April 19, 1962.)

PRESS COMMENTS ON UNITED STATES PROPOSAL TO REGULATE EASTERN PACIFIC TUNA FISHERY:

Two United States Government representatives were in Japan early in April 1962 to explain to the Japanese Government and the Japanese tuna industry the proposal of the United States to regulate the Eastern Pacific yellowfin tuna fishery. The United States proposal is a result of recommendations by the International Inter-American Tropical Tuna Commission. The two United States representatives were Donald R. Johnson, California Area Director, Bureau of Commercial Fisheries, U. S. Department of the Interior, and Fred Taylor, Deputy Special Assistant for Fisheries and Wildlife to the Under Secretary, Department of State.

The news stories which appeared in the Japanese press reporting in substance the meetings held between the two representatives of the United States Government and Japanese Government and industry officials follow in part. In two instances the California Area Director disagrees with the press

Japan (Contd.):

reports and this has been indicated in the proper place in the following translations of the Japanese press reports.

The following is a translation of the article in the Japanese periodical Suisan Keizai Shim-bun of April 3, 1962:

In connection with the proposed United States legislation to regulate the yellowfin tuna fishery in the Eastern Pacific Ocean, the Japanese Foreign Ministry and the Fisheries Agency held a question-and-answer meeting on April 2 in the conference room of the Foreign Ministry with United States fishery representatives who were dispatched to Japan by the United States Government.

At this meeting, the United States representatives presented the most current United States plan to regulate the yellowfin tuna fishery in the Eastern Pacific Ocean and explained its contents to the Japanese representatives. American thinking behind the proposed legislation was sought at this meeting, and the United States representatives were asked to explain points that were not clear to the Japanese.

In February, Director Ito and Mr. Uchi-mura of the Japanese Fisheries Agency attended the Ottawa conference of the International North Pacific Fur Seal Commission and brought back with them the draft of the proposed Eastern Pacific Ocean yellowfin tuna regulation. The United States, after subsequent study of the proposal, revised its contents and on March 30, produced a final plan, details of which were disclosed to the Japanese Government representatives on April 2. By request of the United States representatives, the Japanese Government is withholding public announcement of the details of the current United States regulatory measures, the reason being that the final plan reportedly has not yet been explained to the American tuna industry.

Japanese observers believe that the reason for withholding announcement is that the United States plan for yellowfin tuna regulation may have been considerably revised since the proposal was initially announced. In view of the fact that the proposed regulation has been progressively strengthened up on each re-examination, observers feel that the final regulatory plan may contain further restrictions, such as extension of the area of

catch regulation, adjustment of the following year's quota if overfishing occurs in any one year in the regulated area, and restrictions on imports from non-cooperating countries.

The proposed regulatory area so far disclosed embraces the waters from the American mainland westward to 120° W. longitude north of 5° N. latitude and from the mainland westward to 110° W. longitude south of 5° N. latitude, the boundary north of 5° N. latitude being provisional. Judging from earlier announcements made about somewhat adjusting the boundary off the southern California coast, it can be assumed that this boundary was changed in the current plan.

Concerning the catch quota, there seems to have been no changes made in the plan to limit 1962 landings to 83,000 tons. However, some changes may have been made concerning adjustment of catch quota next year if the 1962 catch exceeds the quota set at 74,600 tons for the open season and up to 8,400 tons as incidental catch after the season closes around October 16. Regulation of yellowfin tuna imports from cooperating countries and restrictions on tuna imports from noncooperating countries were probably also clarified during the meeting.

Originally, the United States proposal to regulate the yellowfin tuna fishery was requested by the Inter-American Tropical Tuna Commission in view of the "necessity of conserving yellowfin tuna stocks in the Eastern Pacific Ocean." A bill has already been submitted to the U. S. Senate Committee on Commerce.

Japan has been requested to submit catch statistics for the proposed area of yellowfin tuna regulation and to cooperate in the regulatory program. The Foreign Ministry and the Fisheries Agency will likely get together as soon as possible with the Japanese tuna industry to examine the proposed United States tuna legislation in order to determine Japan's attitude toward this matter, which Japan will probably communicate to the United States sometime during April. If Japan does not cooperate in this program, it will face severe import restrictions on tuna, which will hurt Japan since it annually exports 100,000 short tons of tuna to the United States. Opinions are being expressed in some quarters that it would be better for Japan to cooperate in the yellowfin tuna regulation proposed by the United States inasmuch as it seems that the catch quota within the regulatory area is not going to be allo-

Japan (Contd.):

cated according to countries and any one country can land as much tuna as it can until the quota is reached.

In part, the Japanese periodical Suisan Keizai Shimbun of April 4, 1962, carried the following news story:

The two United States representatives, who are meeting with Japanese Government leaders, fishery scientists, and tuna industry representatives for 2 to 3 days, have given the following explanations regarding the substance of the yellowfin tuna regulations and the United States' thinking on this subject:

1. Scope of the regulatory area was determined by the U. S. Department of the Interior based on the advice of the Inter-American Tropical Tuna Commission. The regulatory area will extend from the American mainland west to 125° W. longitude north of 15° N. latitude, then east along 15° N. latitude to 120° W. longitude, then south to 5° N. latitude, east to 110° W. longitude, south to 15° S. latitude, east to 95° W. longitude, and south along 95° W. longitude. This is the real regulatory area and the Department of the Interior intends to make no further changes. The regulatory area heretofore understood by Japan embraced the area from the American mainland west to 120° W. longitude north of 5° N. latitude and from the mainland west of 110° W. longitude south of 5° N. latitude. This area was selected on the basis of scientific views held by the International Tropical Tuna Commission and will be referred to as the tuna resources investigation area. From the administrative standpoint, this area would be difficult to regulate, so the U. S. Department of the Interior made changes. (Editorial Comment: The last sentence should read, "Department of the Interior proposes to make changes," according to the California area Director.)

2. Total yellowfin catch quota for 1962 in the regulatory area will be 83,000 tons, of which 74,600 tons can be taken during the open season. The season will close as soon as this quota is reached. No individual catch quota will be assigned to any fishing vessel. After the season closes, a total of 8,400 tons of yellowfin tuna will be allowed to be taken incidentally to other tuna, but the incidental catch of yellowfin tuna must not exceed 15 percent. In this case, landing permits to be issued by the United States Government must

be presented by fishing vessels and their catches will be inspected to make certain that their yellowfin tuna catch does not exceed 15 percent. If fishing vessels observe the 15 percent catch regulation, even if their aggregate yellowfin catch exceeds 8,400 tons, adjustment will not have to be made in the quota for the following year. (Note: Japan had originally thought that quota adjustments would be made the following year.) (Editorial Comment: "Japan's original idea, in this case, was correct. They were told that since the quota was being set to reduce fishing intensity on a population of marine animals, failure to reduce the catch in a certain year would tend to be followed by recommendations for more restriction in future years," according to the California area Director.

3. The United States cannot definitely state when the yellowfin tuna fishing season will open or close. However, assuming the season opens in January, it will probably take until September to attain the 74,000-ton catch limit. Fishing vessels are requested to provide catch statistics on yellowfin tuna taken in the regulatory area to the International Tropical Tuna Commission.

4. With respect to the handling of tuna imports from cooperating countries and application of import restrictions on noncooperating countries, no change has been made in the previously established policy of requiring certificates of origin to determine whether the yellowfin tuna were taken from within the regulatory area.

5. The United States has already explained the contents of the proposed yellowfin tuna regulations to such countries as Mexico, Peru, and Colombia.

The Japanese periodical Suisan Tsushin of April 5 states that the Japanese tuna industry's attitude towards the United States proposal to regulate the Eastern Pacific yellowfin tuna fishery can generally be summed up as follows:

1. Japan does not completely share the theory expounded by the United States that tuna resources are declining. In particular, the American theory that the yellowfin stocks within the proposed regulatory area are different from stocks outside the proposed regulatory area is viewed with skepticism by many Japanese scientists, including Dr. Nakamura, Director, Nankai Regional Fisheries Research Laboratory. In contrast to the Japanese view

Japan (Contd.):

that yellowfin stocks migrate over extensive distances in an east-west direction, the United States claims that the yellowfin tuna migrate in a north-south direction.

Many in the industry feel that possibly joint scientific investigations should be conducted by Japan and the United States to determine whether regulations are necessary. Discussion should then be held on regulatory methods when these researches prove that regulations are necessary.

2. As for the method of regulating the Eastern Pacific yellowfin fishery, in theory it is difficult to accept the idea of not restricting the use of purse-seine gear, which are considered most improperly suited for conserving yellowfin resources, and to regulate use of long-line gear in the same manner as purse-seine gear. This view is shared by a fair number of industry people in Japan. (Editorial Comment: The Japanese view is based on the fact that long line-caught yellowfin tuna on the average are larger in size than purse seine-caught yellowfin tuna.)

3. There is some question concerning the legality of demands being made to apply the yellowfin regulations to countries which are not members of the Inter-American Tropical Tuna Commission. Views are being expressed that it is only proper that the regulatory methods should first be studied on an equal basis by all countries to be affected by the regulations, and regulations then drafted.

4. From the practical standpoint, the two points stressed by the United States, transmission of catch data and withholding of incidental catch of yellowfin tuna to less than 15 percent during the closed season, are not damaging at all to Japan. Thus, rather than be compelled to observe complicated arrangements, like filing certificates of origin, it would be wiser to serve notice to the United States of Japan's intention to actively cooperate with the United States proposal. This view is widespread within the industry.

TUNA LANDINGS AT YAIZU,
MARCH 1962:

A total of 10,758 metric tons of fish valued at 1,154 million yen (US\$3.2 million) was landed at Yaizu, leading Japanese fishing port, during March 1962. This was an in-

crease in landings of 22 percent and an increase in value of 23 percent over the same month last year. (Nippon Suisan Shimbun, April 6, 1962.)

Yaizu Fishery Landings, Principal Species, March 1962			
Species	Quantity	Average Price	
	Metric Ton	Yen/Kg.	US\$/Short Ton
Indian bluefin	2,745	117	295
Big-eyed	1,339	117	295
Yellowfin	1,860	121	305
Albacore	1,801	129	325
Skipjack	384	97	245
Mackerel	1,293	36	91

TUNA IMPORTS FROM OKINAWA:

The first delivery of foreign-caught tuna ever to be landed at the Japanese tuna port of Yaizu was expected to have taken place on March 30, 1962. On that date, the Okinawan carrier vessel No. 1 Ryusui Maru (95 gross tons) delivered about 25 metric tons of yellowfin tuna, with the shipment to be processed through customs and handled as imports.

According to officials of the Japanese firm handling the shipment, additional tuna would likely be imported from Okinawa, which has about three tuna vessels, if the trial shipment proved successful. (Suisan Keizai Shimbun, March 30, 1962.)

JAPANESE SALMON FEDERATION'S VIEWS
ON TRIPARTITE NORTH PACIFIC
FISHERIES CONVENTION:

The Japanese National Federation of Salmon Fisheries Cooperative Associations (NIKKEREIN) considers the problem of revising the Japan-United States-Canada North Pacific Fisheries Convention as vitally affecting the Japanese salmon fishing industry. The statement points out that the Convention "expires this year." (Editor's note: The Convention does not automatically expire, but may be terminated by any party upon one year's notification.)

The Federation also mentions the Japan-Soviet North-west Pacific Fisheries Convention, which "expires four years hence," as vitally affecting the Japanese salmon industry.

On April 16, 1962, NIKKEREIN was to convene a meeting of its nine member associations to determine the position it should take with respect to the revision of both conventions. The Federation represents fishermen engaged in the North Pacific mothership-type salmon fishery.

NIKKEREIN feels that the present Japan-United States-Canada Fisheries Convention is an unfair obligation forced upon Japan by the United States and would like to see this Treaty terminated, and the provisional abstinence line at 175° W, longitude eliminated to permit Japan to fish in the waters to the east of that line. It claims that the provisional abstinence line was established by the United States not to conserve salmon resources but to keep out Japanese fishing vessels. As such, abstinence based on this principle is not recognized by international law. NIKKEREIN fears that Ja-

Japan (Contd.):

pant's failure to negotiate for removal of the provisional abstention line at the expiration of the tri-partite Convention will exert an extremely adverse effect on negotiations to be held with the Russians, when the Japan-Soviet Fisheries Convention expires "four years hence," at which time the Soviet Union can certainly be expected to take advantage of Japan's acceptance of the abstention principle to press for concessions that would virtually destroy the foundation of Japan's salmon fishing industry. NIKKEIREN believes that Japan's recognition of the present abstention line and contentment with being forever shut out from the waters to the east of 175° W, longitude would mean that Japan voluntarily abandons the principle of freedom of the high seas.

In studying the revision of the tri-partite Convention, NIKKEIREN hopes to adopt a policy that strongly reflects the opinion of salmon vessel owners, and to cooperate with the Government, as well as with various interested domestic organizations, to determine the best possible course to follow.

The Suisan Keizai Shimbun adds that signatories to the tri-partite Convention are expected to open negotiations this fall concerning renewal of the Convention. The Japanese Government is now studying the position it should adopt, now that Japan is in a position where it can withdraw from the North Pacific Convention if it wishes, although the Japanese Government has not yet formulated any definite plan. Even if Japan should withdraw from the Convention, it probably would be most difficult for Japan to negotiate a new Convention which would provide for the elimination of abstention lines and would permit Japanese vessels to fish in waters east of the present abstention line, as urged by NIKKEIREN.

In concluding international agreements on fisheries, historical fishing rights are always considered. Views are being expressed that, since Japanese fishing vessels do not have records of having fished in the area east of the present abstention line during the prewar and postwar period, the Japanese Government will find it difficult to take up this problem despite the criticism that can be expected from its fishing industry.

The Japanese periodical further states that changes have taken place in fishing conditions in the Northern Waters (Okhotsk Sea, Bering Sea, and the North Pacific Ocean) since the Convention came into being; one new, unforeseen development being the entry into the fishery of trawler fleets belonging to the Soviet Union, which is not a party to the Convention. In view of this development, it is not inconceivable that the Japanese Government may press for a new Convention, and the Government is expected to vigorously assert Japan's position in that case. (Translation from news item in Japanese periodical Suisan Keizai Shimbun of April 15, 1962.)

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CANNED JACK MACKEREL EXPORTS, FY 1961:

A total of 756,406 cases of canned jack mackerel was approved for export in fiscal

Japanese Canned Jack Mackerel Exports, FY 1961	
Principal Countries or Areas of Destinations	No. of Actual Cases
Singapore (Malaya)	266, 110
West Africa	205, 470
Ceylon	64, 962
Indonesia	48, 314
New Guinea	27, 565
Borneo	24, 933
Middle & Near East	19, 976
Europe	7, 055
North, Central, & So. America	3, 952

year 1961 (April 1961-March 1962), according to data compiled on April 10 by the Japan Canned Sardine and Saury Sales Company.

Canned jack mackerel consignments to the Canned Sardine and Saury Sales Company for export in fiscal year 1962 (April 1962-March 1963) totaled 76,867 cases, as of April 9. (Suisan Tsushin, April 11, 1962.)

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JAPANESE FISHING COMPANY TO SEND LARGE TRAWLERS TO ATLANTIC OCEAN:

A large Japanese fishing company took delivery of its new stern trawler Oe Maru (2,525 gross tons) on April 28, 1962. Following a three-day trial fishing operation in nearby Japanese waters, the Oe Maru was scheduled to depart for the trawling grounds off north-west Africa on May 9.

The Oe Maru is the fifth stern trawler built by the Japanese fishing company. Another large 2,500-ton stern trawler belonging to that company was scheduled to be launched on May 8. Completion date for that newest vessel is late July.

Another large fishing company, which had dispatched its 1,500-ton trawler Daishin Maru No. 10 to the Atlantic Ocean off northwest Africa, planned to dispatch another 1,500-ton trawler (Daishin Maru No. 11) to those same waters in May. This second firm planned to sell its products to such European countries as Italy and Greece, as well as to ship back some of its Atlantic Ocean catch to Japan. Sales for that company are to be handled by a Japanese trading firm. (Suisan Tsushin, April 30; Shin Suisan Shimbun Sokuho, April 28, 1962.)

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FISH MEAL OPERATION OFF ANGOLA AND MOZAMBIQUE PLANNED BY JAPANESE FIRM:

A Japanese firm, which operated the 14,000-ton fish-meal factoryship Renshin Maru off the coast of Angola, Africa, in 1961 plans to conduct fish-meal operations off that coast again in 1962. The firm plans to operate one fish-meal factoryship off Angola between June and October and later send to the same area the fish-meal factoryships Renshin Maru and Kinyo Maru, when those two vessels return from the eastern Bering Sea bottomfish grounds in the fall. The Kinyo Maru is also scheduled to operate off the coast of Mozambique in the Indian Ocean.

Japan (Contd.):

Mozambique, which like Angola, is also a Portuguese colony, reportedly has extended an invitation to the Japanese firm to conduct fish-meal operations off its coast. (Suisan Tsushin, April 30, 1962.)

REGULATIONS FOR BOTTOMFISH FISHING IN BERING SEA:

In line with its plan to establish a licensing system for the mothership-type long-line and gill-net fishery, the Japanese Fisheries Agency officially announced on April 5, 1962, the partial revision of regulations governing mothership-type fisheries. At the same time, the Agency announced regulations governing the licensing of mothership-type long-line and gill-net fishing vessels and procedures for assignment of fishing areas.



Main deck of a Japanese factoryship operating in the Bering Sea. In background, a netload of bottom fish is being unloaded from a lighter.

Licensing Policy for Mothership-type Long-Line and Gill-Net Fishery:

1. License will be valid for a period of one year.
2. Restrictions may be imposed on the number of fishing fleets, fishing areas, fishing gear, fishing method and catch when necessary to conserve resources, regulate fishery, or implement international fishery treaties.
3. Provisions of Item 2 may not apply to special undertakings, such as surveys and investigations.

4. Other conditions and restrictions may be added as necessary.

Procedures for Regulating Mothership-type Bottom-Trawl, Long-Line and Gill-Net Fisheries in Bering Sea:

1. Fishing areas shall be divided into Areas A, B, C, D, E, and F, as in 1961.
2. Based on this area division, fishing areas shall be assigned as follows:
 - a. Mothership-type bottom trawl fishery:
 - (1) Fish meal factoryship - Areas D and E.
 - (2) Fish meal-oil factoryship - Area F.
 - (3) Freezer factoryship - Areas A, B, C, D, and F. Factoryships which previously operated in Area E may be licensed to operate in Areas D and E.
 - b. Mothership-type long-line and gill-net fisheries. Mothership fleets operating long lines and gill nets are authorized to operate in Areas A, B, and C. However, mothership fleets operating bottom trawls in combination with either long lines or gill nets may be authorized to operate in Areas A, B, C, D, and F.
3. Composition of the fishing fleets shall be as follows:
 - a. Generally, the number of catcher vessels assigned to motherships shall be on the same scale as last year.
 - b. The number of catcher vessels which exclusively fish either long lines or gill nets and which are assigned to motherships may exceed the limit set in Item "a" only when the additional vessels to be employed are salmon vessels, which have been retired from the salmon fishery.
 - c. Portable vessels may be carried by motherships at the ratio of two portable vessels for each catcher vessel assigned to a mothership.
 - d. Generally, only long-line and gill-net catcher vessels with previous fishing records or salmon vessels withdrawn from the salmon fishery shall be granted licenses.

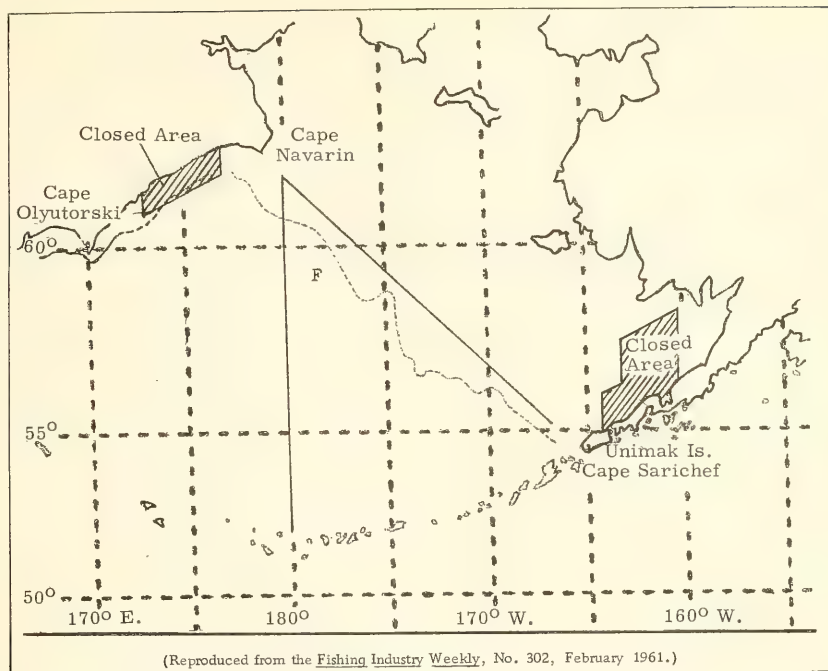
Area and catch restrictions shall be the same as those enforced in 1961, and are as follows:

Area restrictions: (See map.)

Catch restrictions:

1. Incidental catches of halibut (except those taken in areas to the west of 175° W. longitude) and salmon shall be released immediately upon capture.
2. Operations conducted for the purpose of catching king crabs shall be prohibited. When incidental catches of king crabs are high, fishing vessels will move away from those areas.

Japan (Contd.):

**Bering Sea Fishing Areas:**

- Area A: Area between 170° E. longitude and 175° E. longitude.
- Area B: Area between 175° E. longitude and 180° longitude.
- Area C: Area between 180° longitude and 175° W. longitude.
- Area D: Area between 175° W. longitude and 170° W. longitude.
- Area E: Area east of 170° W. longitude.
- Area F: Triangular area formed by the line drawn from Cape Navarin south to Aleutian Islands along 180°, then east along Aleutian chain to Cape Sarichef, Unimak Island, and back to Cape Navarin.

Area Restrictions:

Bottom trawling will be prohibited in the following areas.

Bristol Bay: Area formed by the line connecting the points 56° N.-164° W., 56°20' N.-163° W., 57°10' N.-163° W., and 58°10' N.-160° W., and lying between 160° W. longitude and 164° W. longitude and the Alaska Peninsula.

Russian Coast: Area lying between the Russian coast and the line drawn from Cape Olyutorski and Cape Navarin and between meridians 173° E. and 177° E.

Japan (Contd.):

3. Catch of immature herring under 21 centimeters (8.3 inches) in length shall not exceed more than 10 percent of the total catch of herring per trip. Should immature herring make up more than 10 percent of a trip, fishing must be terminated immediately in the area and vessels must change fishing grounds.

Following the announcement of the regulations to regulate the Bering Sea fishery for bottomfish as a licensed fishery, the Fisheries Agency made public supplementary provisions concerning operations of long-line and gill-net fishing vessels which operate independently in the Northern Waters (including the North Pacific Ocean and the Bering Sea).

According to the supplementary provisions, for the time being, long-line and gill-net fishing vessels planning to operate in the Northern Waters within the area north of 50° N. latitude and east of 170° E. longitude must obtain approval of the Minister of Agriculture and Forestry, unless such vessels are to engage in the mothership-type fishery. Independently-operating fishing vessels requiring approval from the Minister of Agriculture and Forestry include the following vessels, which shall be authorized to operate in fishing areas A, B, and C:

1. Vessels which operated in the Northern Waters in 1961, as well as vessels constructed to replace them.

2. Catcher vessels which previously engaged in the mothership-type fishery which, after replacement of those vessels, seek to operate as independent vessels.

3. Survey and research vessels, as well as training vessels.

The Fisheries Agency is presently studying regulations governing activities of the large stern trawlers operating independently in the Northern Waters and reportedly hopes to control their operations as well. (Suisan Tsushin and Shin Suisan Shimbun Sokuho, Japanese fishery periodicals, April 6, 1962.)

HERRING FISHING IN SHELKOF STRAIT, ALASKA:

A Japanese fishing fleet began early in April 1962 to fish for herring in the waters

south of the Alaska Peninsula. This information was made public by the Japanese Fisheries Agency on April 4. The Japanese fleet is identified as the No. 31 Banshu Maru fleet, according to the Japanese periodical Suisan Keizai Shimbun, April 5, 1962.

The Banshu Maru fleet, consisting of the mothership Banshu Maru (1,500 gross tons) and 4 fishing vessels, 2 of which are purse-seine vessels (No. 1 Hayabusa Maru, 104 gross tons; No. 2 Hayabusa Maru, 180 gross tons), were fishing for mature herring in the Shelikof Strait, which lies between Kodiak Island and the Alaska Peninsula. Production objective of the fleet is 3,000 metric tons of herring roe, of which there is a tremendous shortage in Japan. Price of this product in Japan is quoted at 1 to 1.5 million yen per metric ton or US\$1.26-1.85 a pound. (Herring roe is considered a delicacy in Japan and used mainly for the New Year's trade. In Los Angeles, herring roe sold for around \$6 per pound in January 1962.)

Reportedly, the Fisheries Agency plans to gradually authorize other Japanese firms to operate herring fleets in this general area should the experimental fishing being conducted by the Banshu Maru fleet prove successful. The Agency plans to give careful consideration to the condition of fish stocks and to international developments in authorizing additional operations in those waters.

EXPORT QUOTAS RECOMMENDED FOR CANNED FISHERY PRODUCTS, FY 1962:

The Japanese Ministry of International Trade and Industry (MITI) held a meeting with the Canned Foods Export Committee of the Agricultural and Marine Products Export Council on March 20 to study the FY 1962 (April 1, 1962-March 31, 1963) canned foods export target, and tentatively set the export goal at 15.3 million cases (US\$157.3 million) as compared to the estimate of 14.2 million cases (\$143.2) for the previous fiscal year. The export target is not final and was probably adjusted somewhat during the meeting of the Agricultural Products Export Promotion Council scheduled about April 17. While the export goal will basically remain unchanged, the Canned Foods Export Committee is expected to recommend some changes, according to the March 26, 1962, issue of the Japanese periodical Shin Suisan Shimbun. The Committee presented the following recommendations to MITI:

Japan (Contd.):

1. In an effort to ensure a supply of raw materials for canning purposes, the Government should: (a) Exercise greater degree of administrative leadership to promote collective bargaining between suppliers of raw materials and packers of export canned foods. (b) Revise the law so that export income exemption can be extended to cover suppliers of raw materials. (c) Study ways and means of securing a fish supply for packing purposes. (d) Encourage packers to cultivate crops for canning purposes on a contract basis.

2. Can prices be reduced.

3. Publicity activities in foreign countries be stepped up and Government subsidy increased to cover such expenses.

Export Quotas Recommended by the Japanese Canned Foods Export Committee				
Canned Product	Value		Quantity	
	FY 1962	FY 1961 ^{1/}	FY 1962	FY 1961 ^{1/}
	..(In US\$1,000) ..		..(In 1,000 Cases) ..	
Tuna	32,068	30,734	3,940	3,888
Salmon	54,967	50,263	1,810	1,639
Crab	12,950	12,167	528	513
Sardine	5,040	2,638	720	343
Saury	5,865	2,889	950	537
Mackerel	5,097	4,256	800	613
Shellfish	10,399	10,407	1,360	1,629

^{1/}Figures for FY 1961 are estimates since the fiscal year extends to March 31, 1962.

4. Steps be taken to forestall movements in foreign countries aimed at restricting imports.

5. Loans with which to pay for shipment of goods be granted to joint sales companies under the same loan condition applicable to buyers.

6. Goods on which substantially high tariffs would be imposed through application of the EEC common tariff not be exported.

7. The Government conduct negotiations with the United States for reducing United States import duties on canned tuna in oil from 35 percent to 12.5 percent ad valorem, and on canned crab from 22.5 percent to 10 percent.

8. The Government cooperate in negotiating with Southeast Asian countries, particularly Indonesia and Egypt, to expand their import quotas of canned sardine, canned saury, and canned mackerel.

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Mexico

NATIONAL CONSULTATIVE FISHERY COMMISSION ANNOUNCES FISHERY DEVELOPMENT PROGRAM:

The President of the Mexican National Consultative Fishery Commission, on April 6, 1962, announced his fishery development program to the press. This program, as reported, has six major objectives: (1) Constructing fishing vessels in Mexican shipyards; (2) acquiring large fishing vessels from foreign sources; (3) modernizing marine fishing methods; (4) installing canneries; (5) industrializing marine products; (6) elevating the standard of living of the fishermen.

During the course of arriving at these objectives, the following were expected: (1) Doubling of the present fish catch which was worth about US\$61 million in 1961; (2) tripling local consumption of fishery products; (3) increasing revenue from the fisheries which, in 1961, from severance and export taxes yielded about \$4 million; (4) increasing fishery exports whose 1961 value was about \$39 million; (5) granting of credits for buying vessels, nets, refrigeration equipment, and industrial plants; (6) creating a distributing organization for fishery products in the consuming centers of Mexico; (7) doubling of private investment in the fisheries which now amounts to about \$80 million.

The Commission report was scheduled to be submitted to the Secretary of Industry and Commerce for approval. (United States Embassy, Mexico, report of April 11, 1962.)



Nigeria

TARIFF ON FISH IMPORTS RAISED:

On March 30, 1962, Nigeria announced a drastic tariff increase on fish and other food imports to protect its domestic industries, as well as to increase revenues to enable Nigeria to carry out its Six-Year Economic Development Plan (April 1962-March 1968). According to a Nigerian official trade bulletin dated April 6, the import duty on fresh fish and other food products has been raised to 50 percent ad valorem from the previous 20 percent. (Shin Suisan Shimbun Sokuho, April 7, 1962.)

FISHERIES RESEARCH VESSEL:

Nigeria has acquired a fisheries research vessel built by a British shipyard. Built for

Nigeria (Contd.):

the Nigerian Federal Fisheries, the vessel is 70 feet over-all, 62 feet 3 inches between perpendiculars, with a moulded breadth of 19 feet and depth of 10 feet 6 inches.

Accommodation is provided for a crew of 15 and for two scientists. Fish hold capacity is 1,000 cu. ft. and fuel oil capacity 12 tons.

Main propulsion units are two Diesels each of which develop 120 b.h.p. at 1,000 r.p.m. and drive two 45-inch diameter man-ganese bronze propellers to give the vessel a speed of $9\frac{1}{4}$ knots.

Deck machinery includes a belt-driven winch with a capacity for 300 fathoms of 2-inch wire; a hydrographic survey winch; a $1\frac{1}{2}$ -ton derrick for handling the stern-trawl gear; and a 1-ton derrick for hoisting the auxiliary boat. The 15-foot auxiliary boat is carried on chocks immediately aft of the wheelhouse. Also, 10-man inflatable liferafts are carried on either side of it. (The Fishing News, British periodical, March 23, 1962.)



Pakistan

JAPAN TO SEND FISHERY SURVEY TEAM TO PAKISTAN:

The Japanese Overseas Fisheries Cooperative Association was reportedly planning to send a fisheries survey team to Pakistan in mid-April 1962 at the request of the Pakistan Industrial Development Corporation, a Government agency. The request was originally made to the Japan Plant Cooperative Association, but in view of Pakistan's earnest desire to develop its fisheries jointly with Japan, a decision was made to dispatch a fishery survey team. The consultant team, consisting of three members, was to examine shore facilities and conduct coastal and off-shore water surveys for approximately 40 days. If the survey proves promising, Pakistan is expected to seek Japanese assistance in developing its fishing industry. (Shin Suisan Shimbun Sokuho, April 7, 1962.)



Peru

FISH OIL PRODUCTION AND EXPORTS REACH NEW HIGH IN 1961:

Peruvian fish oil production in 1961, at the preliminary figure of 121,253 short tons, reached a new high and was nearly 2-1/2 times the 1960 level of production.

Most of Peru's fish oil production is exported as crude or inedible oil and the rapid rise in production was reflected in a similar increase in exports. Total exports of fish oil as registered by the Callao Customhouse reached a record 112,772 tons in 1961, almost three times the exports in 1960.

Data on 1961 exports by destination are not available. Of the total fish oil exported in 1960, however, about 43 percent went to the Netherlands, 30 percent to Western Germany, 21 percent to Denmark, and the remaining 6 percent to other West European countries.

The export price of fish oil averaged \$/2.84 per kilogram in 1961 (about 5 U.S. cents per lb.), \$/2.83 per kg. in 1960 (about 5 cents per lb.), and \$/2.61 per kg. in 1959 (about 4 cents per lb.).

The apparent total domestic consumption increased from 8,952 tons in 1959 to 9,370 tons in 1961. Of those totals, 3,086 tons in 1959 and 3,638 tons in 1961 were consumed in edible form for making margarine and shortening.

Peru's Fish Oil Supply and Distribution, 1959-1961			
Item	1961 ^{1/}	1960 ^{1/}	1959 ^{2/}
	(Short Tons)		
Supply:			
Stocks January 1	6,189	686	2,439
Production	121,253	53,143	26,120
Total supply	127,442	53,829	28,559
Distribution:			
Exports	112,772	38,584	18,921
Apparent consumption . .	9,370	9,056	8,952
Stocks December 31 . . .	5,300	6,189	686
Total distribution . . .	127,442	53,829	28,559
1/ Preliminary.			
2/ Revised.			

Production and exports of fish oil are expected to increase sharply in 1962. The domestic use of fish oil for edible purposes is expected to show further increases.

Peruvian fish oil production and exports increased in the summer-fall of 1961. An incentive to exports was an administrative action by the Government to change the antiquated basis for determining the export tax. It was formerly based upon unrealistically low production costs resulting in an export duty which precluded Peruvian fish oil producers from competing effectively in world markets. Increased production was largely due to better use of existing equipment, although there were some additional installations of machinery.

Domestic consumption of fish oil to supplement edible oil supplies from other sources is increasing. Local edible oil processing mills were paying better prices in October 1961 than could be obtained abroad for Peruvian fish oil. The foreign price had been from 10 to 15 percent above the local price, but that was not the case in October 1961.

There is at present no marketing organization for fish oil, although the possibility of establishing such an organization appeared to be under consideration as of October 1961. If it should be established, it might be handled by the Consorcio Pesquero del Peru.

Peru's exports of fish oil for the first six months of 1961 totaled 54,690 metric tons, valued at 153.9 million soles

Peru (Contd.):

(US\$5.7 million), compared with exports for the same period of 1960 of 13,130 metric tons, valued at \$33.2 million soles (\$1.4 million).

EXPORTS OF MARINE PRODUCTS, 1960-61:

Exports of principal marine products by Peru during 1961 were substantially greater than in 1960. Meal and oil exports were up considerably. (United States Embassy, Lima, report of March 30, 1962.)

of the year when exports are always higher because of the backlog accumulated during the peak of the packing season.

The new metal can factory is well under way, although its opening scheduled for February 1962 has been postponed for some months. The original investment totals 44,000,000 pesetas (US\$733,000) with 55 percent belonging to three Galician groups and 45 percent to a French firm which has made arrangements for technical advice with a large United States can manufacturer.

Peruvian Exports of Principal Marine Products						
Marine Products	October-December 1961			1961		
	Qty.		Value <u>1/</u>	Qty.		Value
	Metric Tons	Million Soles	US\$ 1,000	Metric Tons	Million Soles	US\$ 1,000
Fish meal	180,208	360.4	13,443	708,366	1,328.6	49,556
Fish (frozen, canned, etc.)	10,959	58.8	2,193	39,449	255.0	9,511
Fish oil	26,018	76.1	2,838	102,306	290.8	10,847
Sperm oil	2,628	9.6	358	9,063	33.7	1,257
Fertilizer (guano)	10,553	27.6	1,029	15,861	41.6	1,552
Whale meal	1,050	1.3	48	5,147	7.0	261
<u>1/</u> F.o.b. values converted at rate of 26.81 soles equal US\$1.						



Spain

FISH CANNING INDUSTRY TRENDS:

The first quarter of 1962 was a period of seasonally reduced activity for the Spanish fish-canning industry as is normal between the end of one sardine season in December and the beginning of the next in April. For lack of canning species--e.g., sardines, bonito--the factories concentrated on specialties prepared in small quantities, such as shellfish, principally to keep the regular plant personnel employed.

However, exports of canned fish were maintained at a high level, following a trend begun in 1961. From the Vigo zone alone exports were: 915 metric tons valued at US\$607,156 between January 20-February 20, 1962; 975 tons at US\$635,397 between November 20-December 20, 1961, and 924 tons at US\$620,651 between September 20-October 20, 1961. While there are no comparable figures available, it is estimated that exports in January-February this year were 50 percent more than those in the same two-months period of 1961 and, moreover, they have maintained the high level of the second half

The installations consist of a mechanical shop and a container mill equipped with 3 automatic belts for handling 225 cans per minute, and 5 automatic belts, plus related machinery. Production at the outset is estimated at 80 million units per year with expansion plans for two more belts, bringing the total annual production to 150 million units. Number of employees will total about 500 persons, between administrative, technical, and plant personnel. (United States Consulate, Vigo, report of April 5, 1962.)

VIGO FISHERIES TRENDS, JANUARY-FEBRUARY 1962:

Fish unloaded at Vigo port during January 1962 amounted to 3,453 metric tons with an ex-vessel value of 50,718,579 pesetas (US\$845,000) as compared with 3,679 tons at 49,849,117 pesetas (\$831,000) in January 1961. In February 3,751 tons were unloaded valued at 44,373,811 pesetas (\$740,000) against 3,645 tons at 48,394,323 pesetas (\$807,000) in February 1961. Sardines were very scarce, with only 38 tons landed this January as against 293 tons in January 1961. This is the usual seasonal low point for this species. The seasonal decline began in October 1961 when 5,097 tons were landed, and landings dropped to 2,152 tons in November, and 78 tons in December 1961. Due to the great abundance of sardines at the peak of the season (May-September) during the past three years (1959-1961), the customary conservation fishing ban lasting from February 15 to April 15 has been lifted on a trial basis.

In the middle of January, ten fishing boats set out from Vigo for Newfoundland for the cod fishery season. They plan to use the system of "dragging in pairs" which has

Spain (Contd.):

given good results in recent years. The vessels, with a total carrying capacity of about 3,000 tons of wet salted cod, will return to port in late April or early May.

The cod fishery firm in Vigo has suspended its operations, which have turned out to be unprofitable in competition with the more modern plant in La Coruna. The four cod trawlers which comprised its fleet have been sold to a firm in Huelva for 40,000,000 pesetas (\$667,000). Of this amount, about 10,000,000 pesetas (\$167,000) will go to pay up naval credits on the vessels, over a period of 10 years. After repairs in Vigo, it is understood that the vessels will take part in the Newfoundland cod fishery or in fishing off West Africa where the new owners have other vessels fishing. The Vigo cod fishery facilities are reportedly to be sold to a firm in La Coruna or El Ferrol, each of which has its own cod fleet.

A Vigo fishery firm has purchased the vessel Habana for conversion to the first Spanish floating fishery factoryship. It will be used to transport catches of its fleet operating in South Africa and along the coast of South America. The same company's freezer-equipped vessel Andrade returned to Vigo from South African waters, unloading about 250 tons of frozen hake. At present the vessels Lemos and the Pambre (the third of a planned fleet of six freezer vessels to be built) are fishing in South African waters which are considered more fruitful and economical.

The new Law for the Renovation of the Spanish Fishing Fleet grants a concession of 4 billion pesetas (\$66.7 million) for the modernization of the fleet between 1962 and 1971, distributed as follows: 400 million pesetas (\$6.7 million) each for the years 1962, 1966, 1967, and 1968; 500 million pesetas (\$8.3 million) for 1963, 1964, and 1965; and 300 million pesetas (\$5.0 million) for 1969, 1970, and 1971. Credits will be granted for 80 percent of the cost of building at an annual interest of 4 percent with amortization terms of 20 years for those using steel hulls and 12 years for wood. Preferential treatment will be given to those submitting plans with modern installations and equipment. The law has been well received among fishing circles, even though some believe that the allotments for the initial period should be larger in order to give greater impetus to building. (United States Consulate, Vigo, report of April 5, 1962.)



Tahiti

SECOND APPLICATION FOR TUNA BASE SUBMITTED TO JAPANESE FISHERIES AGENCY:

Japanese press reports indicate that considerable attention has been focused on developing new tuna bases in the South Pacific Ocean area. An article in the Suisan Tsushin of April 25, 1962, stated that a large Japanese fishing company and a large United States tuna packer are planning to establish a tuna base in Tahiti together with a French firm, and that the Japanese firm had already submitted a petition to the Japanese Fisheries Agency to seek approval of the project.

According to the petition, the three companies, which would share equally in the investment, would construct a 2,000-ton capacity cold-storage plant. Eventually, from 35 to 50 tuna vessels of under 200 tons gross

would be contracted to deliver their catches to the base, but initially about 25 vessels would be employed in the first year of operation. Tuna landed at the base are to be frozen and exported to the United States and France, as well as brought back to Japan.

The Japanese firm plans to assign to the Tahiti base tuna vessels which already have valid tuna licenses but would give preference to the utilization of fishing vessels displaced from the salmon fishery this year.

The application submitted by the Japanese firm to build a joint tuna base at Tahiti is the second one of its kind. In mid-March, a Japanese trading company submitted an application to the Fisheries Agency to establish a tuna base at Tahiti together with another large United States tuna packer and a French firm. The scale of that project appears to be somewhat smaller, calling for the construction of a 1,100-ton capacity cold-storage plant and the utilization of a smaller tuna fleet. (Suisan Tsushin, April 25, and March 15, 1962.)



U.S.S.R.

SOVIET FISHING ACTIVITIES IN BERING SEA, MARCH 1962:

About 150 to 200 Soviet vessels were fishing in the Bering Sea for flounder, ocean perch, and herring as of early April 1962. Over 100 of those vessels were operating in the area north of the Pribilof Islands, in outer Bristol Bay, and northeast of Unimak Island. Four factoryships, 80 trawlers, 20 refrigerated transports, several tankers, tugs, and cargo vessels were sighted during April. The floating base ship Orochen and about 30 vessels were fishing for flounder. The large stern-trawlers Ulianovsk and Baikal were exploiting a newly-developed ocean perch fishing area.



Typical Russian factoryship operating in the Bering Sea.

U. S. S. R. (Contd.):

Soviet winter herring fishing in the Bering Sea was concluded early in April with catches exceeding the 1962 quarterly plan by 50 percent. When the herring dispersed for spawning, the Soviet fishing fleet shifted to ocean perch. The feasibility of ocean perch fishing was discovered during the recent exploratory fishing of the medium-size trawler Karaga. (Unpublished sources.)

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SOVIETS PURCHASE MORE FROZEN FISH FROM ICELAND:

The U. S. S. R. has signed a trade agreement with Iceland for the purchase of 18,000 metric tons of frozen fillets in 1962, of which 13,000 tons will be cod, and 5,000 tons ocean perch or other groundfish. This will be a sizable increase over the 7,500 tons of Icelandic frozen fish imported by the U. S. S. R. in 1961.

The Soviets agreed to increase the price for cod fillets to £145 per ton (18.4 U. S. cents a pound) from the £128 per ton (16.2 cents a pound) in 1960. (United States Embassy, Reykjavik, March 15, 1962.)

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SOVIET FISHING ON GEORGES BANK IN NORTH ATLANTIC, MARCH-APRIL 1962:

By mid-March 1962, the Soviet fishing fleet, now in its second year of operation on Georges Bank, numbered about 50 vessels. Among these were 17 large stern-trawlers of the Pushkin (2,450-gross-tons each) and Leskov (2,890 tons each) classes. About 10 medium trawlers of the Okean class (500 gross tons each) were also sighted. The rest of the fleet was composed of small trawlers (250-gross-ton SRT's) and supply tenders. Sizable hauls of herring weretaken in a large area 60 to 180 miles east of Cape Cod. Some groundfish was also caught.

By the beginning of April 1962, the picture changed rapidly. Many new smaller vessels have arrived in the area, while several large stern-trawlers left. Over 100 Soviet vessels as of mid-April 1962 were fishing on Georges Bank, thus approaching the peak number of Soviet vessels attained in late 1961 when an estimated 110 vessels were in the area. Last year at the same time Soviet fishing vessels had not yet arrived on Georges Bank. (Unpublished sources.)

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MURMANSK IS PRINCIPAL FISHING PORT AND PROCESSING CENTER:

The Murmansk Fish Combine has grown from a small operation in the 1930's to handle about 700,000 metric tons, or 20 percent of the 1960 U. S. S. R. catch. From this catch, the Combine produced 300,000 tons of frozen, salted, and smoked fish, plus 15 million units of canned fish. Only the canning operation is substantially mechanized; filleting, weighing, and other work is still done by hand. Further mechanization is planned.

The 1965 goal is 340,000 to 350,000 tons of fishery products (excluding canned fish). For supplies of fresh and frozen fish, the trend is towards relying more on factory trawlers. The Combine sells its products to a state marketing organization (RYSBYT) for distribution locally and to various parts of the U. S. S. R. (Unpublished sources.)

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OCEANOGRAPHIC RESEARCH ACTIVITIES:

The research vessel Voieikov returned to Vladivostok in March 1962 after a 3-months voyage to the North and Central Pacific. During the Voieikov's seventh expeditionary trip, hydrometeorological conditions in the Pacific Ocean were studied. The 350-ton Soviet oceanographic vessel Akademik Vavilov returned to Odessa from its 4-months voyage to the Mediterranean Sea. The purpose of this expedition was to study biological conditions in the Mediterranean Sea during the winter. Eleven scientists participated in the expedition. (Unpublished sources.)

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TUNA EXPLORATORY FISHING SURVEY IN INDIAN OCEAN ENDED:

The Soviet tuna fishing clipper Nora and the fishing vessel Ekvator returned late in 1961 from a five-months exploratory fishing trip to the Indian Ocean. This expedition, which was organized by the Far East Fishing Administration, caught 140 metric tons of tuna near the coasts of Ceylon, Maldive Islands, Chagos Archipelago, and Sumatra. Analysis of the results indicates good prospects for tuna fishing in the central Indian Ocean, confirming data obtained by the reconnaissance ship Vitiaz on another voyage. A similar expedition of two vessels was exploring in the Atlantic Ocean off Paramaribo, Brazil, at the end of 1961.

This year the Far Eastern Fishing Administration plans to start fishing commer-

U. S. S. R. (Contd.):

cially for tuna in the South Pacific. The Soviet Seven-Year Plan calls for 20,000 metric tons of tuna landings in 1965. (Rybnoe Khoziaistvo, November 1961, and other sources.)

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NEW VESSELS FOR SOVIET FAR EAST FISHERIES:

During the latter part of March and early April 1962, five large ships were completed for delivery to the Soviet Far East fishing fleet which fishes in the Bering Sea and Bristol Bay.

Arman, a giant mothership (17,140 full-load displacement tons) of the B-62 Severodvinsk class was built in Poland. On its voyage to Vladivostok, the vessel was to tow small floating docks.

Barabash, a freezer trawler of the Maikovskii class, was completed in Nikolaev on the Black Sea. This 3,170-gross-ton and 279-foot vessel was proceeding to Vladivostok with its crew of 102.

The Evron and Khanke, two refrigerated vessels of the Bratsk class, were launched in Stralsund (East Germany). The 2,495-gross-ton vessels are 269 feet long and 43 feet wide, have an average speed of 11 knots, and are equipped with modern radio-navigation equipment.

The 5,500-gross-ton refrigerated transport Eggersheld of the Sevastopol class was on its maiden voyage from Leningrad to Vladivostok. This new vessel was making the trip via the Antarctic in order to transport products of Soviet whaling operations. (Unpublished sources.)

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PRODUCTION OF CANNED FISH INCREASING:

In 1961, Soviet production of canned fish was 760 million standard cans (350 grams or about 12.3 ounces each), which exceeded the 1961 plan by 28.4 million cans. The 1961 production compares favorably with outputs of 632 million cans in 1958 and of 700 million cans in 1959. (Rybnoe Khoziaistvo, January 1962.)



United Kingdom

FISHERY LOANS INTEREST RATES REVISED:

The British White Fish Authority announced that, as a result of a change in the rates of interest charged to them by the Treasury, their own rates of interest on loans made as from April 7, 1962, will be as follows:

Fishing vessels of not more than 140 feet, new engines, nets and gear: on loans for not more than five years, $5\frac{3}{8}$ percent, no change; on loans for more than five years, but not more than 10 years, 6 percent, no change; on loans for more than 10 years, but not more than 15 years, $6\frac{1}{2}$ percent, no change; on loans for more than 15 years, but not more than 20 years, $6\frac{7}{8}$ percent, no change.

Processing plants: on loans for not more than 15 years, $7\frac{1}{2}$ percent, decrease $\frac{1}{8}$ percent; on loans for more than 15 years, but not more than 20 years, $7\frac{1}{2}$ percent, no change.

The rates on loans made before April 7 are unchanged. (Fish Trades Gazette, April 21, 1962.)





FEDERAL ACTIONS



Department of Commerce

COAST AND GEODETIC SURVEY

SHIPS OF TOMORROW MAY DEMAND A NEW-LOOK IN NAVIGATIONAL CHARTS:

With the rapid advancement of marine electronics, and the modern design of ships, involving new concepts of speed and propulsion, the U.S. Coast and Geodetic Survey (C&GS) has awarded a \$22,000 contract for a study to determine whether or not nautical charts are meeting the needs of the modern mariner, it was announced on March 26, 1962.

The contract, one of the first projects negotiated by the Survey's Office of Research and Development, was awarded to Reed Research, Inc., of Washington, D. C. It is expected to be completed within 6 months.

"We believe that our nautical charts are the best our profession can produce and are considered the world's standard," commented the C&GS Director. "But what about tomorrow with the increasing tempo of development of scientific navigational instruments and systems such as satellite navigation. We cannot afford to become complacent in the face of today's dynamic progress."

The study will be approached in two phases. The first will be a survey of chart-users, both present and future, to determine their ultimate needs in nautical charts. The second phase will be an examination of the current state of the nautical charting art, including a literature survey, personal contacts, and discussion with organizations and individuals faced with similar problems in related fields. A major part of the work in phase two will be an attempt to ascertain the type and scope of chart detail needed by chart users in the years to come.

The information assembled in the study will be invaluable in determining if the present long-range program for chart modernization is compatible with what the chart-user wants. A thirty-year program to modernize the 830 published nautical charts was begun in 1957. An accelerated program would provide for the compilation, reconstruction, or maintenance of 10-18 additional charts in fiscal year 1964.

Although the chart user will be asked to suggest basic changes in the nautical chart format, the Coast and Geodetic Survey has an obligation to maintain certain engineering and professional standards that cannot be subjected to public poll. The chart is an instrument on which navigation problems are to be developed and solved, and such standards as type of projection, precise positioning, and interpretation of detail will continue to be the cartographers responsibility.

What the chart user will be asked, however, is what topographic detail should be depicted on the chart? Should roads leading to marinas and docks be shown? Should charts of similar scale be "butted" together rather than overlapped, as they are now? Can these charts be just as useful if they are printed on lightweight paper, and folded?

Looking into the future, some chart-makers believe that the traditional "sounding" may eventually be replaced on the chart with "bottom contours." Ships equipped with electronic depth recording equipment, for example, can navigate "by ear," using "bottom contours."

Reconstruction and maintenance of nautical charts is a continuous process--and a costly one. Coastal features are constantly being altered by the wind, tides, and other natural forces, as well as the work of man. The destructive Atlantic coast storms in March 1962, for example, may require that as many as 80 C&GS nautical charts be revised to show changes wrought by tides and waves.



Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

PUBLIC HEARING ON STANDARD OF IDENTITY FOR FISH FLOUR:

A public hearing on a definition and standard of identity for fish flour or fish protein concentrate was announced by the U. S. Food and Drug Administration in the Federal Register of April 28, 1962. The hearing will start at 10 a.m. (E.D.T.), June 18, 1962, in the North Building, Department of Health, Education, and Welfare, Washington, D. C. A pre-hearing conference of interested parties will be held at 10 a.m. on June 12.

The hearing will cover points in a regulation published last January 25 which would have required that fish flour be made from edible, cleaned fish after discarding the heads, tails, fins, viscera and intestinal contents. The January 25 order has been stayed pending the outcome of the hearing.

Persons who filed formal objections and requested the hearing were: Senator Paul H. Douglas of Illinois; Harold Putnam, on behalf of VioBin Corporation, Monticello, Ill.; Vincent A. Kleinfeld of Bernstein, and Alper, on behalf of Gulf Menhaden Co., Cameron, La.; the members of Industrial Products Division, National Fisheries Institute, Inc., Washington, D. C.; the members of Virginia Fishermen's Association, Reedville, Va.; and Fish Products Co., Lewes, Del.

Following are the issues on which testimony will be taken at the hearing:

1. Whether the inclusion of heads, tails, fins, viscera, and intestinal contents of fish would result in a finished product that is filthy or otherwise unfit for food as defined in section 402(a) (3) of the Federal Food, Drug, and Cosmetic Act.

2. Whether it would promote honesty and fair dealing in the interest of consumers to promulgate a standard of identity for fish flour prepared from whole fish, including heads, tails, fins, viscera, and intestinal contents.

3. Whether the restriction of raw material for fish flour to "edible species of fish" was proper.

4. What processing steps are required for manufacturing fish flour that is defatted, odorless, and tasteless, and has the necessary storage stability and bacterial count, and whether the process employs any food additive that is unsafe (whether or not heads, tails, viscera, and intestinal contents are included).

5. What name is proper (whether or not heads, tails, fins, viscera, and intestinal contents are included).

6. Whether the requirement for a minimum of 70 percent protein is proper, or whether a lower figure should be set.

7. Whether the requirement of a maximum of 6 percent moisture is proper, or whether a higher figure should be set.

8. Whether the standard of identity as issued on January 25, 1962, will promote honesty and fair dealing in the interest of consumers.

The notice of hearing said an examiner will be appointed to conduct the hearing and the appointment will be announced in the Federal Register at a future date. After the hearing, the examiner is required to file a report together with suggested findings, conclusions and order, and to certify the entire record of the proceedings to the Commissioner of Food and Drugs for action.



Department of the Interior

DEPARTMENT URGES APPROVAL FOR FISHING VESSEL DISASTER LOANS:

Passage of a Congressional measure to provide disaster loans to fishing vessel owners and operators has been urged by the U.S. Department of the Interior in a letter to Chairman Herbert C. Bonner of the House Committee on Merchant Marine and Fisheries.

The bill would, in effect, extend the principle established for agricultural disaster aid to the fish food production industry. The Secretary of the Interior would be authorized to make loans to fishing vessel owners and operators when he finds that fishery production failure or resource disaster arising from natural causes has created a need for credit not available from commercial sources.

Assistant Secretary of the Interior Frank P. Briggs suggested several amendments to pending legislation--H. R. 9375--to assure judicious use of the authority granted.

One of the suggested amendments is to change the procedure set forth in this bill for financing the proposal. The Department recommended that the present fishery loan authority in section 4 of the Fish and Wildlife Act of 1956 be amended to include the provisions of the proposal. No increases in appropriation authorization is believed necessary to carry out the purposes of the bill, Assistant Secretary Briggs' letter said. He added that such a step would promote uniformity in present fishery loan procedures and would avoid transferring money from a Department of Agriculture revolving fund, as the pending legislation provides.

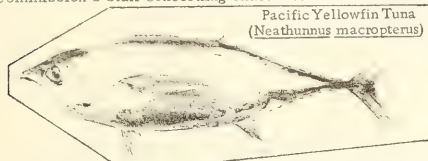
Another change suggested by the Department of the Interior would limit eligibility for loans to those adversely affected by a resource disaster estimated to continue no longer than 18 months. The Assistant Secretary's letter also stated that production failure or resource disaster must be temporary and that restoration of the fishery resource be foreseeable and impending. He said he did not believe that the program should be used to "shore-up" financial difficulties of fishermen whose income depend upon an eroding or fading resource and that an attempt to so use it would be an injustice both to the fishermen and the national economy.

TROPICAL PACIFIC YELLOWFIN TUNA CONSERVATION LEGISLATION ENDORSED:

Endorsement of proposed Federal legislation to regulate the yellowfin tuna fishery in the eastern tropical Pacific Ocean was announced on May 1, 1962, by the Department of the Interior.

A pending Congressional bill (S. 2568) to amend the Tuna Convention Act of 1950 to include conservation regulations is based on the recommendations of the Inter-American Tropical Tuna Commission, an investigative body established by the Tuna Convention of which the United States, Costa Rica, Panama, and Ecuador are members.

Scientific evidence collected over the past decade by the Commission's staff concerning exact measurements of com-



mercial yellowfin tuna catches in relation to the abundance of the fishery stocks, their natural reproduction, and mortality rates indicates that unless the fishery is regulated at once the yield of yellowfin tuna from the eastern tropical Pacific may be seriously reduced.

In a letter to Senator Warren G. Magnuson, Chairman of the Senate Committee on Commerce, Assistant Secretary of the Interior Frank P. Briggs stated, "We believe that our Government should cooperate fully with the Commission's recommendations. If the Commission's recommendations are carried out, our domestic fishery as well as the fishery of the other participants to the convention will benefit materially by preventing damage to the resource and the maintenance of maximum sustained yield."

The Department's Fish and Wildlife Service said that in 1950 the yellowfin tuna seemed to be an inexhaustible resource and this might have held true for many years except for recent developments in fishing techniques and gear.

In the eastern tropical Pacific Ocean, Bureau of Commercial Fisheries marine biologists explain, oceanic factors make purse seining possible, and the advent of nylon fishing nets and mechanized power blocks to handle the nets made purse seining practicable, greatly increasing efficiency. The old tuna bait boats, which took three or four months to bring home a load of fish, have been replaced or converted to purse seiners which often can bring home a payload in 30 days. The result was a total catch last year of about 120,000 tons of yellowfin tuna—an amount estimated to be more than the maximum sustainable yield. Tuna Commission biologists believe the catch dipped into the stocks last year and that such continued utilization can mean only a severe decline in the resource, affecting fishermen, boat owners, docks, canners, and consumers.

The measure now in Congress proposes a quota limiting the 1962 catch to 83,000 tons--74,600 tons during the yellowfin season and 8,400 tons incidental to the skipjack season which follows. The quota would be set annually by the Tuna Commission, and provision also is made for import restrictions on all yellowfin tuna except from countries with regulations meeting the conservation requirements.

BUREAU OF OUTDOOR RECREATION ESTABLISHED:

Carrying out President Kennedy's instructions regarding the coordination of Federal outdoor recreation programs, Secretary of the Interior Stewart L. Udall on April 2, 1962,

signed an order establishing a Bureau of Outdoor Recreation in the Department.

President Kennedy announced that Dr. Edward C. Crafts, of Chevy Chase, Md., would be appointed Director of the new Bureau. Crafts, a career Federal employee, is now serving as Assistant Chief of the Forest Service of the Department of Agriculture.

The Outdoor Recreation Resources Review Commission recommended the creation of the Bureau in its January 31 report, and President Kennedy in his special message on conservation, transmitted to Congress on March 1, said the recommendation would be adopted.

In the message, President Kennedy said: "This bureau will carry out the planning functions already assigned to the Department of the Interior and will administer the program of Federal assistance to State agencies. . . This new bureau will serve as the focal point within the Federal Government for the many activities related to outdoor recreation."

In the same message, the President called for legislation to establish a program of matching grants for the development of state plans for outdoor recreation.

In recommending a new bureau for outdoor recreation, the Outdoor Recreation Resources Review Commission--a blue-ribbon commission composed of outstanding conservationists and members of congress--said:

"There are now more than 20 Federal Agencies with programs involving some aspect of outdoor recreation. A similar multiplicity is found among state agencies. While the programs of these agencies are generally well planned in themselves, little thought is given to the over-all development of outdoor recreation throughout the Nation.

"There is at present no focal point for coordination of recreation policy, planning, programs, or management. Over-all responsibility for initiating and guiding a national effort in outdoor recreation has never been explicitly assigned. . . . After consideration of all possibilities, the recommendation for a new bureau in the Department of the Interior is made as the most likely to be accepted."

Secretary Udall created the new Bureau under the authority conferred on him by Reorganization Plan No. 3, approved by the 82nd Congress in 1950.

Besides administering the current state cooperative services under 1936 legislation and the proposed state assistance program on which legislation will soon be submitted, the new Bureau will assist the Secretary in carrying out his Federal outdoor recreation coordination responsibilities, sponsor and conduct recreation research, conduct recreation resource surveys, develop a nationwide recreation plan, and disseminate outdoor recreation information.

Secretary Udall said a nucleus organization is being formed and a number of the functions of the Park Service's Division of Recreation Resource Planning are being transferred to the new Bureau. The new Bureau will coordinate recreational planning, rather than carry out land-management functions of existing agencies.

AMERICAN FISHERIES ADVISORY COMMITTEE

NEW MEMBERS NAMED BY INTERIOR SECRETARY:

Appointment of six new members of the American Fisheries Advisory Committee was announced on April 4, 1962, by Secretary of the Interior Stewart L. Udall. They replace former members who had served the maximum of two consecutive three-year terms.

The American Fisheries Advisory Committee has 20 members. It was organized in 1955 in accordance with provisions of the Saltonstall-Kennedy Act for the betterment of

the domestic commercial fishing industry. Members are selected from the ranks of active members of the industry for the purpose of making recommendations and advising the Secretary on technological, biological, economic, marketing, and educational problems of the domestic fisheries.

The committee meets once or twice a year, depending upon circumstances. Its most recent meeting was at Galveston, Tex., December 7 and 8, 1961. Matters discussed included the development of deep-water fisheries in the Gulf of Mexico, a longrange shrimp research program, marketing opportunities in several prairie States, and comparative fishing vessel construction costs.

Various fishery research programs are financed by the Saltonstall-Kennedy funds which represent an amount equal to 30 percent of the duties paid on the imports of fish and fishery products. The programs are conducted by the Bureau of Commercial Fisheries, Fish and Wildlife Service.

The six new members are: George J. Davidson, Boston Fish Pier, Boston, Mass.; Louis Fischer, Fischer's Sea Foods, Cocoa, Fla.; John A. Mehos, Liberty Fish and Oyster Company, Galveston, Tex.; Anthony Nizetich, Manager, Fishermen's Cooperative Association, San Pedro, Calif.; Einar Pedersen, Seattle, Wash.; and Daniel H. Smith, Smith Brothers Fisheries, Port Washington, Wis.

The continuing members are: William P. Ballard, President, Ballard Fish and Oyster Company, Inc., Norfolk, Va.; Ralph E. Carr, President, Mid-Central Fish Company, Kansas City, Mo.; Harold F. Cary, assistant to the President, Van Camp Sea Food Company, Long Beach, Calif.; Chris Dahl, Kayler-Dahl Fish Company, Petersburg, Alaska; Ray H. Full, President, Kishman Fish Company, Vermillion, Ohio; David H. Hart, Cape May, N.J.; H.R. Humphrey, Jr., President, Standard Products Company, Inc., White Stone, Va.; Leon S. Kenney, President, Pinellas Seafood Company, St. Petersburg, Fla.; E. Robert Kinney, President, Gorton's of Gloucester, Gloucester, Mass.; John S. McGowan, Executive Vice President, Bumble Bee Seafoods, Inc., Astoria, Ore.; James McPhillips, Vice Chairman, Southern Industries Corporation, Mobile, Ala.; Arthur H. Mendonca, President, F.E. Booth, Inc., San Francisco, Calif.; J. Richards Nelson, Madison, Conn.; and Lawrence W. Strasburger, Metairie, La.

The retiring members are: Lawrence C. Calvert, President, San Juan Fishing and Packing Company, Seattle; John W. Lewis, Morgan City, La.; Donald P. Loker, Vice President, Star-Kist Food, Inc., Terminal Island, Calif.; Moses B. Pike, General Manager, Holmes Packing Corporation, Eastport, Maine; Harry F. Sahlman, Sahlman Sea Foods, Fernandina Beach, Fla.; and Arthur S. Sivertson, Sivertson Brothers Fisheries, Duluth, Minn.

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FISH AND WILDLIFE SERVICE

BUREAU OF COMMERCIAL FISHERIES

PROPOSED REVISION OF FISHERIES LOAN FUND PROCEDURES:

Proposed standards for underwriters furnishing insurance on collateral--principally fishing vessels--used in obtaining loans from the Department of the Interior Fisheries Loan Fund were published in the Federal Register of May 11, 1962. Other changes, primarily for the purpose of clarification, also are proposed.

The purpose of the revision is to provide for procedural changes necessitated by transfer of certain acts formerly performed by the Small Business Administration to the De-

partment of the Interior, to clarify the meaning of several sections, and to provide published standards that insurance underwriters furnishing insurance on property serving as collateral for a fisheries loan fund must meet.

Because of the numerous changes, it is proposed to revise all of Part 250 referring to Fisheries Loan Fund procedures. The part includes sections on definition of terms; purposes of the loan fund; interpretation of loan authorization; qualified loan applicants; basic limitations; applications; processing of loan applications; approval of loans; interest; maturity; security; books, records, and reports; insurance required; and penalties on default.

The Fisheries Loan Fund was created by the Federal Fish and Wildlife Act of 1956 to finance assistance to the fishing industry to bring about a general upgrading of both fishing vessels and fishing gear.

Interested persons had until June 10, 1962, to submit their written comments, suggestions, or objections on the proposed changes to the Bureau of Commercial Fisheries.



Treasury Department

COAST GUARD

ADDITIONAL HELP ON BERING SEA FISHERY PATROL:

Increased efforts will be made in patrolling the fisheries of the eastern Bering Sea this year, the Department of the Interior reported on April 9, 1962.

At the request of the U. S. Bureau of Commercial Fisheries, the U. S. Coast Guard has agreed to expand its Alaskan patrol. The Coast Guard informed the Bureau that the cutters Winona (Port Angeles, Wash.), Wachusett, and Klamath (both stationed in Seattle, Wash.), assisted by Coast Guard planes, will enforce international and United States fisheries regulations. The areas to be covered are the eastern half of the Bering Sea, Bristol Bay, the area immediately south of the Aleutian Islands, and the Gulf of Alaska.

The patrol will be in addition to the annual Bering Sea Patrol, which has been carried out by the Coast Guard since 1867. This year's Bering Sea Patrol will be conducted by the

Coast Guard icebreakers Northwind (Seattle, Wash.) and Storis (Kodiak, Alaska).

The expanded Alaskan Patrol by the Coast Guard will permit the Bureau of Commercial Fisheries vessel John R. Manning (Juneau, Alaska) to increase its patrol efforts for protecting the halibut fisheries of the northern Pacific Ocean.

The increased enforcement activities result from numerous complaints received by the Bureau of alleged violations relative to the taking of salmon, halibut, whales, fur seals, and, in some instances, the use of illegal equipment in the areas to be patrolled.



White House

CONFERENCE ON CONSERVATION:

President Kennedy and Vice President Johnson were the principal speakers at the White House Conference on Conservation in Washington, D.C., on May 24-25, 1962. President Kennedy spoke at 11:30 a.m., on Friday, May 25, and Vice President Johnson sounded the conference keynote.

The conference, held in the State Department Auditorium, brought together for the first time conservation spokesmen from throughout the country and Federal, state, and Congressional conservation authorities for a discussion of "Conservation for the Sixties."

The program included four panel sessions, two featuring Federal cabinet officers, one composed of the members of Congress, and one of state Governors. A question and answer period was part of each panel session.

Panel speakers from the Federal agencies, each discussing aims and objectives of their agencies in "Conservation for the Sixties," were Secretary of the Interior Stewart L. Udall, Secretary of Agriculture Orville L. Freeman, and Robert C. Weaver, Administrator of the Housing and Home Finance Agency, Abraham A. Ribicoff, Secretary of Health, Education and Welfare, and Elvis J. Stahr, Secretary of the Army. Moderator of the morning session was Laurance S. Rockefeller, Chairman of the Outdoor Recreational Resources Review Commission. Gilbert F. White, Chairman of the Department of Geography at the University of Chicago, was the afternoon moderator.

Following the conclusion of the executive department panels, Senator Clinton P. Anderson of New Mexico, Chairman of the Senate Interior and Insular Affairs Committee, took over as moderator of the panel on "Conservation and the Congress." Participating with him were Senators John Sherman Cooper of Kentucky and Hubert H. Humphrey of Minnesota and Representatives Wayne N. Aspinall of Colorado and John P. Saylor of Pennsylvania. Senator Cooper is a member of the Agriculture and Forestry and Public Works Committees, and Senator Humphrey is a member of the Appropriations Committee. Aspinall is Chairman of the House Interior and Insular Affairs Committee and Saylor is ranking minority member of the same committee.

Friday morning, May 25, prior to the President's address, was devoted to a panel of State Governors.



Eighty-Seventh Congress (Second Session)

Public bills and resolutions which may directly or indirectly affect fisheries and allied industries are reported. Introduction, referral to committees, pertinent legislative actions, hearings, and other actions by the House and Senate, as well as signature into law or other final disposition are covered.



AID BY FOREIGN GOVERNMENTS TO FISHERIES:
The Fishing Industry. A Report on Foreign Governmental Protection of Fishing Industries Against Competition from Imports, Committee Print (87th Congress, 1st Session, Prepared at the Request of the Committee on Commerce, United States Senate, by the Legislative Reference Service of the Library of Congress), 16 pp., printed. A wide range of measures have been taken by governments to encourage their fishing industries. In the OEEC countries, various types of loan assistance and subsidies for the construction of fishing vessels and processing plants are provided. Some quantitative restrictions against fishery imports still exist, but they are gradually disappearing. In this report there are charts showing the custom duties on fishery products in various countries. Short summaries of the fishery import duties and regulations of the different foreign countries are given.

ANTIDUMPING ACT AMENDMENT: S. 3284 (Javits) was introduced in the Senate on May 10, 1962, to amend certain provisions of the Antidumping Act, 1921; referred to the Committee on Finance. Would amend the Antidumping Act of 1921, to make it more effective in

preventing Soviet bloc exports from disrupting free world markets.

EXEMPT TRANSPORTATION OF AGRICULTURAL AND FISHERY PRODUCTS: The Senate and the House on May 1, 1962, received an executive communication from the Secretary of Commerce, transmitting a draft of proposed legislation, a bill to exempt certain carriers from minimum rate regulation in the transportation of bulk commodities, agricultural and fishery products, and passengers, and for other purposes.

S. 3243 (Magnuson) introduced in the Senate on May 3, 1962, to exempt certain carriers from minimum rate regulation in the transportation of bulk commodities, agricultural and fishery products, and passengers, and for other purposes; referred to the Committee on Commerce. The bill exempts carriers from minimum rate regulation by the Civil Aeronautics Board, the Federal Maritime Commission, and the Interstate Commerce Commission in the transportation of bulk commodities and certain agricultural and fishery products. The exemption from minimum rate regulation provided would apply to all carriers subject to regulation by the Interstate Commerce Commission. Such exemption applies to (1) bulk commodities, (2) agricultural and fishery products, and (3) passengers. The exemption from minimum rate regulation for the transportation of certain agricultural and fishery products (specified in sec. 203(b) of the Interstate Commerce Act) now available only to motor carriers and freight forwarders would be extended under this section to all carriers subject to the Interstate Commerce Act. The proposed bill defines "property consisting of ordinary livestock, fish (including shellfish), or agricultural (including horticultural) commodities (not including manufactured products thereof) shall not be deemed to include frozen fruits, frozen berries, frozen vegetables, wool tops, and noils, or wool waste (carded, spun, woven, or knitted), and shall be deemed to specifically include cooked or uncooked (including breaded) fish or shellfish when frozen or fresh (but not including fish and shellfish which have been treated for preserving, such as canned, smoked, pickled, spiced, corned, or kippered products."

H.R. 11583 (Harris), a companion bill to S. 3243, was introduced in the House on May 3, 1962, referred to the Committee on Interstate and Foreign Commerce.

FISH AND WILDLIFE LEGISLATION: 1962--Miscellaneous Fish and Wildlife Legislation (Hearings before the Subcommittee on Fisheries and Wildlife Conservation of the Committee on Merchant Marine and Fisheries, House of Representatives, 87th Congress, 2nd Session), 141 pp., printed. Contains hearings on H.R. 2722, to direct the Secretary of the Interior to establish a research program in order to determine means of improving the conservation of game and food fish in dam reservoirs; H.R. 6529, to provide for the establishment of a new fish hatchery in the eastern part of the State of Tennessee; H.R. 7336, to authorize the Secretary of the Interior to make loans to certain producers of oysters, and for other purposes; and H.R. 8371, to authorize the Secretary of the Interior to establish, construct, equip, operate, and maintain a fish hatchery in DeKalb County, Tennessee.

FISHERY MARKETING ACT AMENDMENT: H.R. 11562 (Pelley) and H.R. 11573 (Zelenko) were introduced in the House on May 2, 1962, and H.R. 11606 (Tollefson) on May 3, to make clear that fishermen's organizations, regardless of their technical legal status, have a voice in the ex-vessel sale of fish or other aquatic products

on which the livelihood of their members depends; referred to the Committee on Merchant Marine and Fisheries. Would amend the Fisheries Marketing Act of 1934 to extend bargaining privileges to organizations composed of both employee fishermen and those who own or have an interest in the boats or gear with which they fish. Similar to other bills previously introduced.

INTERIOR APPROPRIATIONS FY 1963: Interior Department and Related Agencies Appropriations for 1963 (Hearings before a Subcommittee of the Committee on Appropriations, United States Senate, 87th Congress, 2nd Session on H.R. 10802), 1446 pp., printed. Included is the testimony for funds for the Fish and Wildlife Service: the Commissioner's Office and its two bureaus, Sport Fisheries and Wildlife, and Commercial Fisheries.

The Subcommittee of the Senate Committee on Appropriations met in executive session on May 1, 1962, to consider H.R. 10802, making appropriations for the Department of the Interior and related agencies for the fiscal year ending June 30, 1963, and for other purposes. Funds for the Fish and Wildlife Service and its two Bureaus are included in this bill.

The Senate Committee on Appropriations met in executive session on May 9, 1962, to consider H.R. 10802. The Committee, on May 10, 1962, met in executive session, and ordered favorably reported with amendments H.R. 10802.

S. Rept. No. 1450, Interior Department and Related Agencies Appropriation Bill, 1963 (May 10, 1962, a report from the Senate Committee on Appropriations, to accompany H.R. 10802), 39 pp., printed. The Committee recommended funds for Interior Department for fiscal year 1963 be increased over the amount included in the House bill.

For the Bureau of Commercial Fisheries under management and investigations of resources, the Committee recommended an appropriation of \$15,981,500, which is \$1,381,500 more than the House allowance and \$768,500 more than the budget estimate. For management and investigations of resources the appropriation for 1962 was \$12,550,000 (includes \$400,000 in Supplemental Appropriation Act of 1962); budget estimate, 1963, \$15,213,000; House allowance \$14,600,000. Included in the Committee recommendation is the full amount of the budget estimate for research of fish migration over dams and \$56,500 of the \$113,000 reduction imposed by the House on funds for travel, supplies and materials, and equipment. Also included is: (1) \$350,000 for increased biological research on shrimp in the Gulf of Mexico, (2) \$125,000 for an accelerated program on research and development of shrimp gear, and (3) \$350,000 for a program of Atlantic herring research. In addition to the amount indicated, the Committee concurred with the House allowance of \$300,000 for purchase of foreign currencies to be used for research contracts in foreign countries. A recommendation of \$8,473,000 for construction activities was made. This includes \$413,000 of the \$514,000 disallowed by the House for fixed equipment to be built into the fishery laboratories to be constructed at Seattle, Wash., and at Ann Arbor, Mich. The amount also includes \$160,000 to purchase land and accomplish land filling necessary in connection with construction of the Shellfish Research Center at Milford, Conn., authorized by Public Law 87-173. The Committee concurred with the House allowance of \$750,000 for subsidy payments for fishing vessels constructed in U. S. yards. The Committee also

concurrent with the House allowance of \$600,000 for general administrative expenses. The Committee recommended \$1,998,000 for the administration of the Pribilof Islands, the same as the House allowance; and a limitation of \$250,000 (same as House allowance) on administrative expenses for the fisheries loan fund.

For the Bureau of Sport Fisheries and Wildlife, the appropriation for 1962 under management and investigation of resources was \$23,315,650; budget estimate, 1963, \$26,572,000; the House allowed \$26,500,000; the Senate Committee recommended \$27,436,000, with increases earmarked for a number of different activities. Committee recommended \$8,033,800 for construction of fish hatcheries, wildlife refuges, and fish and wildlife research facilities as compared to the House allowance of \$4,900,000 and the budget estimate of \$4,086,000. The increase provides for hatchery construction, expansion of research facilities, modernization and improvement of fish hatcheries, etc. The Committee concurred with the House allowance of \$7 million for migratory bird conservation. The Committee recommended \$1,331,000, the full amount of the budget estimate and \$81,000 more than the House allowance, for general administrative expenses.

For the Office of the Commissioner of Fish and Wildlife, the Committee approved \$364,000, the same as the amount allowed by the House, the budget estimate, and the 1962 appropriations.

MEDICAL CARE FOR VESSEL PERSONNEL: The Merchant Marine and Fisheries Subcommittee of the Senate Committee on Commerce on May 2, 1962, held and concluded hearings on S. 367, to provide medical care for certain persons engaged on board a vessel in the care, preservation, or navigation of such vessel. Testimony was received from various Federal agencies and industry.

OCEANOGRAPHY: Study of the Effectiveness of the Committee on Oceanography of the Federal Council for Science and Technology (Hearings before the Subcommittee on Oceanography of the Committee on Merchant Marine and Fisheries, U. S. House of Representatives, 87th Congress, 2nd Session), 222 pp., printed. Contains hearings held February 28, March 1 and 2, 1962. Testimony was given by Government agencies and research groups.

PRICE-QUALITY STABILIZATION: H.R. 11778 (May) introduced in the House on May 16, 1962, to amend the Federal Trade Commission Act, to promote quality and price stabilization, to define and restrain certain unfair methods of distribution and to confirm, define, and equalize the rights of producers and resellers in the distribution of goods identified by distinguishing brands, names, or trademarks, and for other purposes; to the Committee on Interstate and Foreign Commerce. Similar to other bills previously introduced.

SCIENCE AND TECHNOLOGY OFFICE: H. Res. 595 (Anderson) was introduced in the House on April 11, 1962, disapproving Reorganization Plan Number 2 of 1962; referred to the Committee on Government Operations.

Reorganization Plan No. 2 of 1962, Office of Science and Technology--National Science Foundation (Hearing before the Subcommittee of the Committee on Government Operations, House of Representatives, 87th Congress, 2nd Session), 50 pp., printed. Contains the hearing held on April 17, 1962, on the President's Reorganization Plan No. 2 of 1962, which would establish in the

Executive Office of the President the Office of Science and Technology, and H. Res. 595, that the House of Representatives does not favor the Reorganization Plan Numbered 2 of 1962. Statements were presented by Government personnel and interested persons.

House Report No. 1635, Approving Reorganization Plan No. 2 of 1962 (Office of Science and Technology--National Science Foundation)--April 19, 1962, Report from the Committee on Government Operations to accompany H. Res. 595, 12 pp., printed. Committee reported unfavorably on H. Res. 595 and recommended that the resolution do not pass. The report contains a summary of Reorganization Plan No. 2 of 1962, which would establish in the Executive Office of the President the Office of Science and Technology. The report contains H. Res. 595, its purpose, analysis of the plan, and general statements of the various agencies interested in the plan. The committee stated that "the plan is a reasonable exercise of the President's powers under the Reorganization Act and would be beneficial to the Government."

The House on May 17, 1962, by a voice vote, rejected H. Res. 595, to disapprove Reorganization Plan No. 2 of 1962 (to establish in the Executive Office of the President the Office of Science and Technology). The effect of the rejection of the resolution is that the plan is approved. Under the Reorganization Act, unless either the House or the Senate disapproves a Reorganization plan of the President by resolution within a specified time, the plan goes into effect. "Reorganization Plan No. 2 of 1962, Relating to Certain Reorganizations in the Field of Science Technology (House Doc. 372)," establishes the Office of Science and Technology as a new unit within the Executive Office of the President; places at its head a Director appointed by the President and by the advice and consent of the Senate and provides for a Deputy Director similarly appointed; and transfers to the Director certain functions of the National Science Foundation. The principal function of the new Office is to coordinate and evaluate the research and development programs of the various Federal Government agencies in order to eliminate duplication. The Director of the new office will be conferred certain functions now performed by the National Science Foundation in order to enable the Director to advise and assist the President in achieving coordinated Federal policies for the promotion of basic research and education in the sciences and the authority to evaluate scientific research programs undertaken by agencies of the Federal Government. Also, the plan provides for certain reorganizations within the Foundation to strengthen the position of Director in that agency.

SCIENCE AND TECHNOLOGY COMMISSION: The Senate Committee on Government Operations held hearings on May 10, 1962, on S. 2771, to establish a Commission on Science and Technology. Testimony was received from various Government agencies and interested persons outside the Government. It was announced that future hearings would be held on this bill for which no dates were set. The Committee recessed subject to call.

TARIFF CLASSIFICATION RESTATEMENT IN TARIFF ACT OF 1930: The House on May 10, 1962, concurred with the Senate amendment to H.R. 10607, to amend the Tariff Act of 1930 and certain related laws to provide for the restatement of the tariff classification provisions, and for other purposes. The bill was cleared for the President.

TECHNOLOGICAL LABORATORY LAND IN MARYLAND: S. 3019 (Beall) introduced in the Senate on March 19, 1962, to provide for the conveyance of certain real property of the United States to the State of Maryland; referred to the Committee on Interior and Insular Affairs. Property affected is the site of the Bureau of Commercial Fisheries Technological Laboratory at College Park, Md.

TRADE AGREEMENTS EXTENSION ACT OF 1962: H.R. 11708 (Davis) was introduced in the House on May 10, 1962, to extend the authority of the President to enter into trade agreements under section 350 of the Tariff Act of 1930, as amended, and to provide for use of that authority so as to expand United States exports and to establish the conditions for fair competition between imported articles and articles of domestic production; referred to the Committee on Ways and Means.

TRANSPORTATION ACT OF 1962: The House and the Senate on May 1, 1962, received an executive communication from the Secretary of Commerce, transmitting a draft of proposed legislation, a bill to provide for strengthening and improving the national transportation system, and for other purposes.

S. 3242 (Magnuson) introduced in the Senate on May 3, 1962, to provide for strengthening and improving the national transportation system, and for other purposes; referred to the Committee on Commerce. The bill empowers the regulatory transportation agencies to sanction experimental freight rates, and modifications in existing systems of service, classification, and documentation; prohibits common carriers subject to the Interstate Commerce Act from discriminating as to service or rates in the transportation of vehicles or containers tendered by shippers or carriers; declares it to be in the national interest that through service and joint rates, fares and charges between carriers of all modes of transport be encouraged and promoted and

authorizes the Federal Maritime Commission to participate with the Civil Aeronautics Board and the Interstate Commerce Commission in joint boards for the review of such rates; authorizes the Interstate Commerce Commission to enter into cooperative agreements with the states for enforcement of the economic and safety laws and regulations of the States and the Federal Government concerning highways transportation.

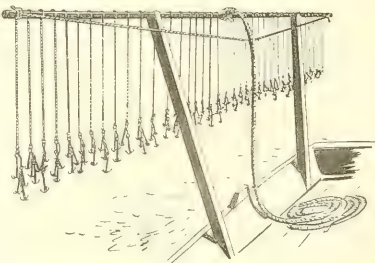
H.R. 11584 (Harris), a companion bill to S. 3242, was introduced in the House on May 3, 1962, referred to the Committee on Interstate and Foreign Commerce.

TUNA CONVENTION ACT OF 1950: On April 27, 1962, Senator Engle (for himself and Sen. Magnuson) submitted, by request, an amendment in the nature of a substitute for S. 2568, a bill to amend the act of September 7, 1950, to extend the regulatory authority of the Federal and State agencies concerned under the terms of the Convention for the establishment of an Inter-American Tropical Tuna Commission, signed at Washington, May 31, 1949, and for other purposes. The substitute bill was referred to the Committee on Commerce. The substitute bill provides authority for the United States to enact conservation regulations in order to respond to the Commission's recommendations for an annual yellowfin tuna catch quota for the Convention area in the Eastern Pacific. It now changes a number of sections of S. 2568. The Inter-American Tropical Tuna Commission was originally conceived as an investigatory body. But with recent development of new fishing techniques and gear, namely purse seining with nylon nets and power blocks, the productivity of the U. S. tuna fleet has increased rapidly, particularly as regards yellowfin tuna, and certain conservation regulations are needed.

The Senate Subcommittee of the Merchant Marine and Fisheries Committee met on May 23, 1962, to consider S. 2568.

CROWFOOT BAR

This type of equipment consists of a large metal bar to which are attached numerous lines closely set together. To each line there is affixed several barbless hooks. When the gear is dragged over the bottom, the hooks catch between the shells of the fresh-water mussel lifting the animal from the bottom. It is only used in inland waters where fresh-water mussels are taken commercially.

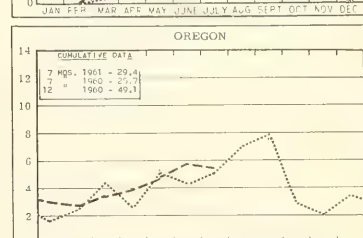
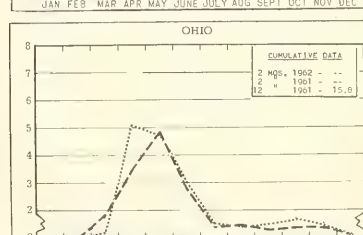
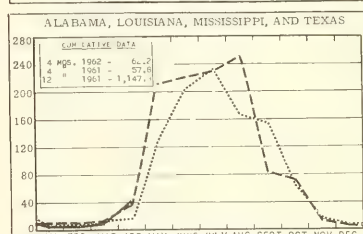
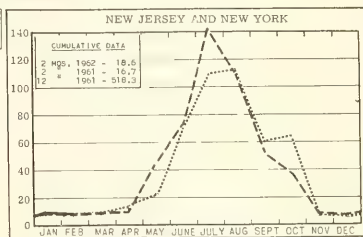
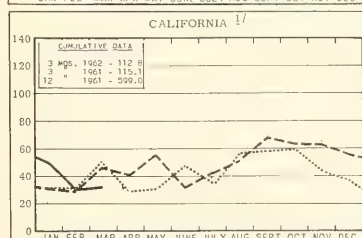
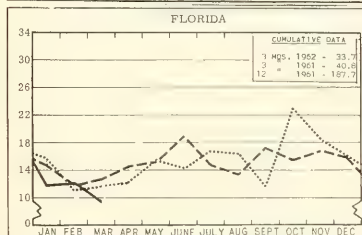
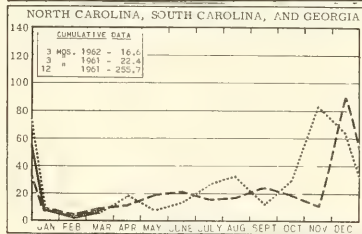
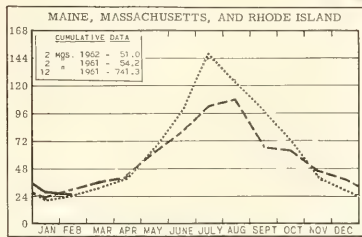


Crowfoot bar.

Note: Excerpt from Circular 109, Commercial Fishing Gear of the United States, for sale from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., single copy, 40 cents.

**CHART 1 - FISHERY LANDINGS for SELECTED STATES**

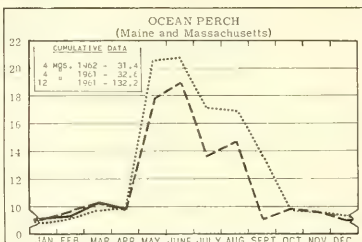
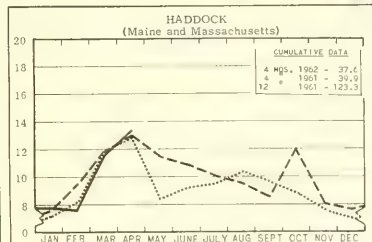
In Millions of Pounds



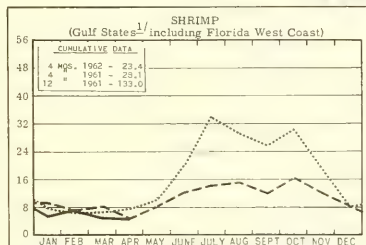
1/ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

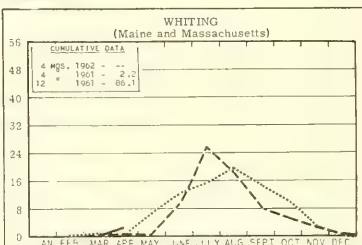
In Millions of Pounds



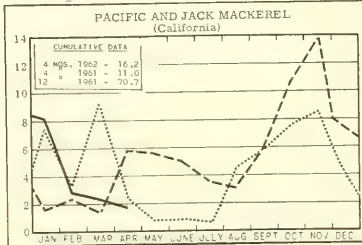
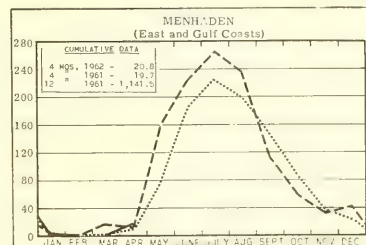
In Millions of Pounds



^{1/}LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.



In Thousands of Tons



In Thousands of Tons

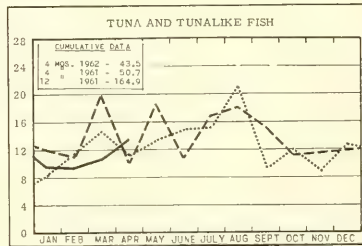
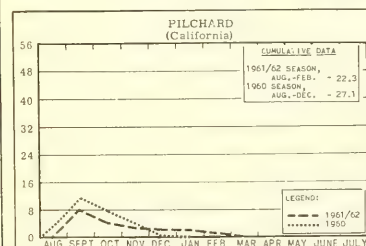
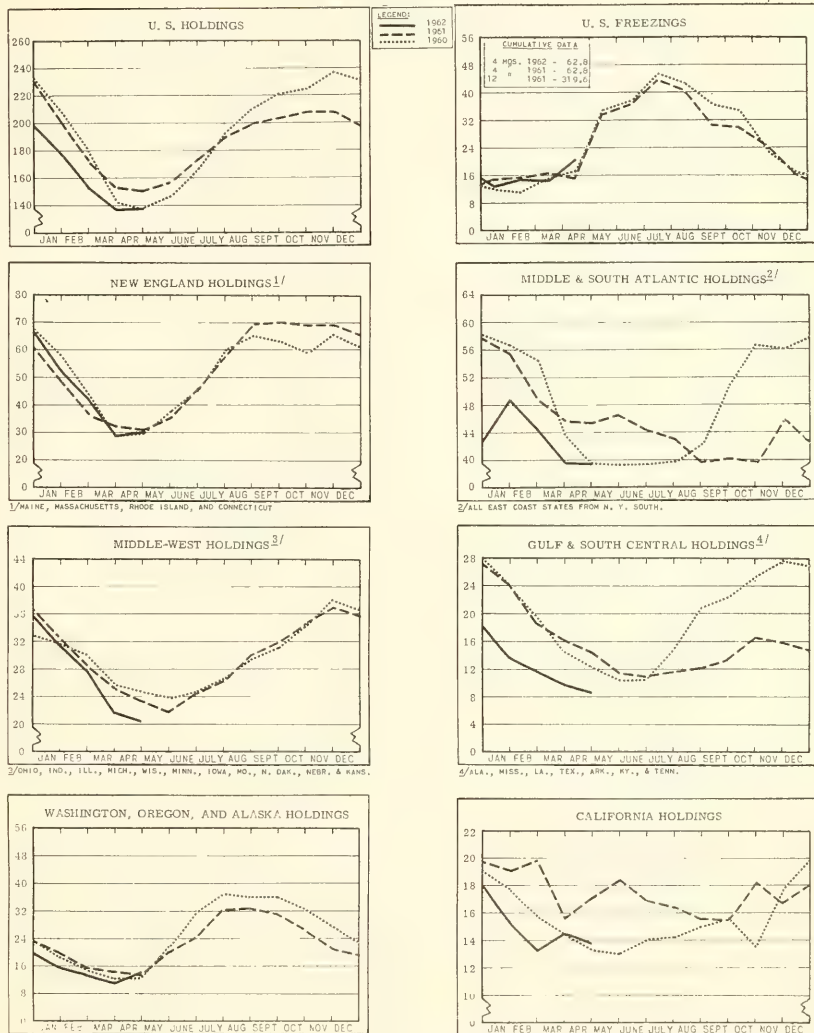


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

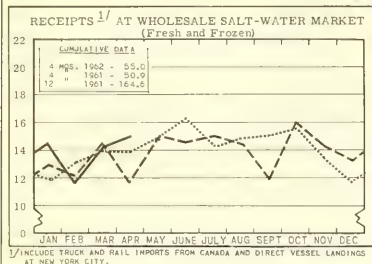
In Millions of Pounds



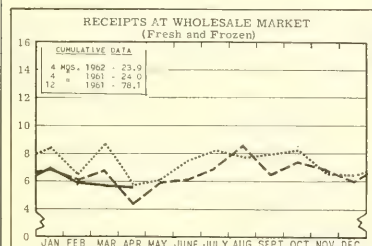
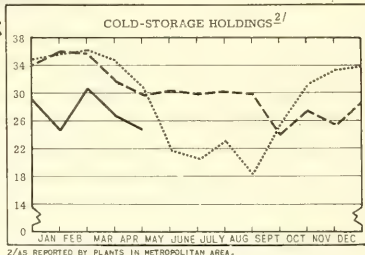
* Excludes salted, cured, and smoked products

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

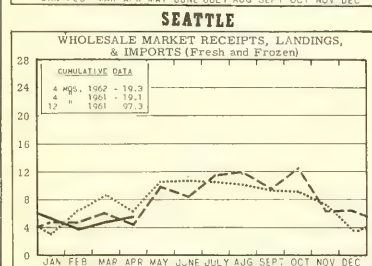
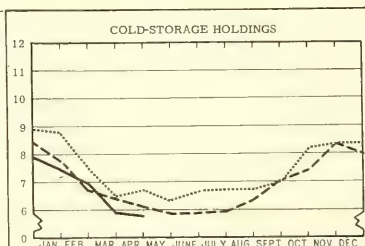
In Millions of Pounds



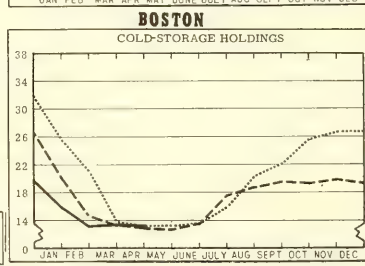
NEW YORK CITY



CHICAGO



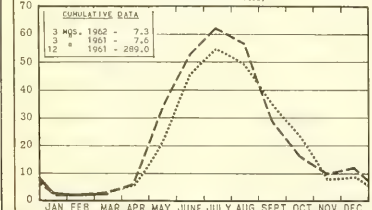
BOSTON



LEGEND:
 — 1962
 - - 1961
 1960

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA

FISH MEAL
(In Thousands of Tons)



FISH OIL
(In Millions of Gallons)

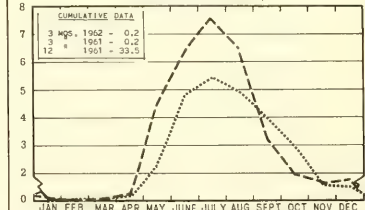
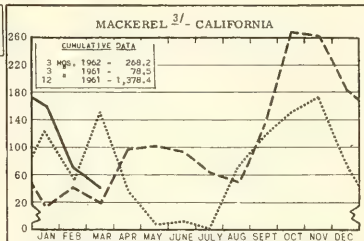
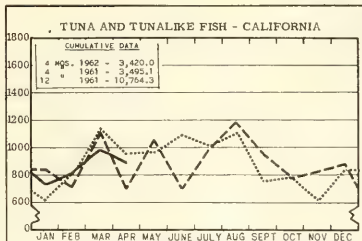
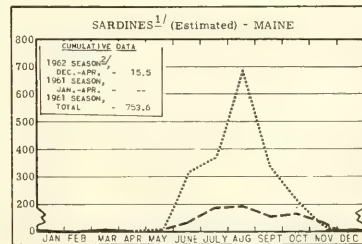
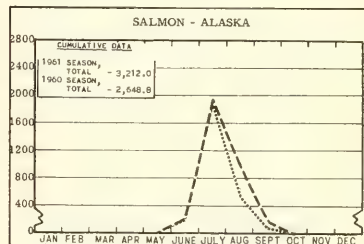
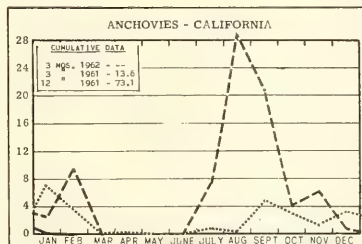


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



^{3/} INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.



^{1/} INCLUDING SEA HERRING. ^{2/} THE 1962 SEASON STARTED DEC. 2, 1961.

STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	$\frac{1}{4}$ drawn	3 $\frac{1}{2}$ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# $\frac{1}{2}$ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	$\frac{1}{2}$ -lb.	8 oz.

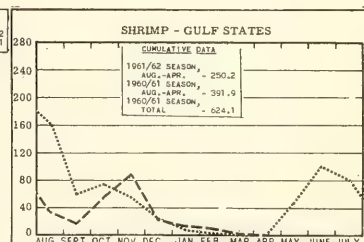
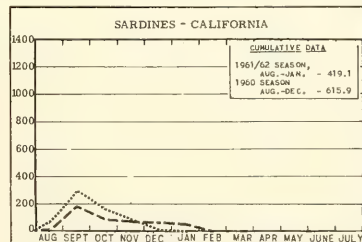
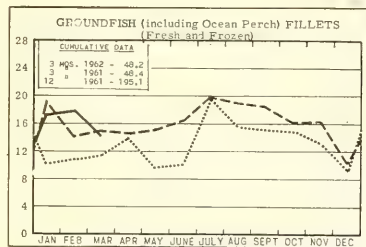
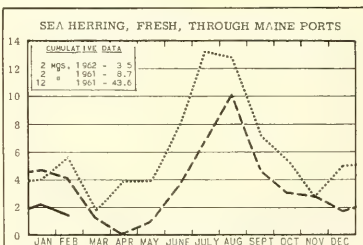
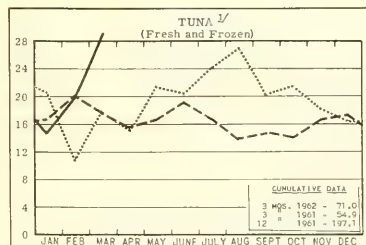
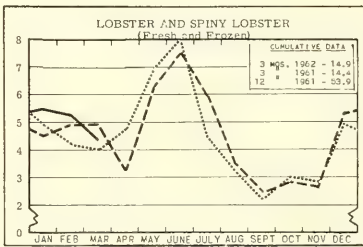
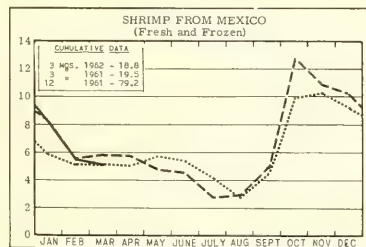
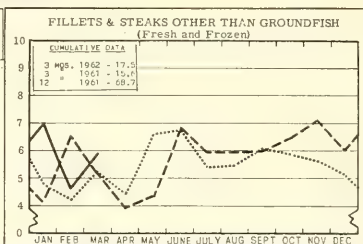


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

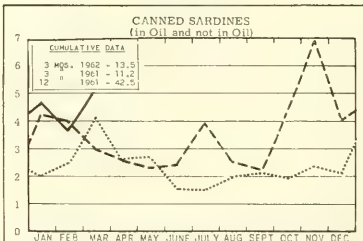
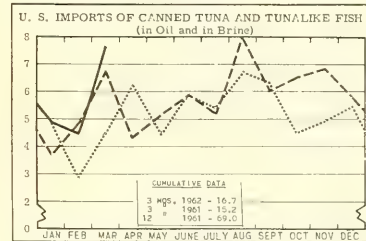
In Millions of Pounds



LEGEND:
----- 1961
..... 1962



^{1/2} EXCLUDES LOINS AND DISCS.





FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE OFFICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

- | Number | Title |
|----------|--|
| CFS-2808 | - Frozen Fish, 1961, Annual Summary, 14 pp. |
| CFS-2829 | - South Carolina Landings, 1961, Annual Summary, 5 pp. |
| CFS-2830 | - Massachusetts Landings, November 1961, 5 pp. |
| CFS-2831 | - Virginia Landings, 1961, Annual Summary, 10 pp. |
| CFS-2832 | - North Carolina Landings, 1961, Annual Summary, 8 pp. |
| CFS-2833 | - Maine Landings, January 1962, 4 pp. |
| CFS-2837 | - Michigan Landings, January 1962, 2 pp. |
| CFS-2838 | - South Carolina Landings, January 1962, 2 pp. |
| CFS-2839 | - Frozen Fish Report, February 1962, 8 pp. |
| CFS-2846 | - Alabama Landings, January 1962, 2 pp. |
| CFS-2849 | - New Jersey Landings, January 1962, 3 pp. |
| CFS-2851 | - New York Landings, January 1962, 4 pp. |
| CFS-2852 | - Mississippi Landings, January 1962, 2 pp. |
| CFS-2853 | - Virginia Landings, January 1962, 3 pp. |
| CFS-2854 | - Georgia Landings, February 1962, 2 pp. |
| CFS-2858 | - Georgia Landings, 1961, Annual Summary, 8 pp. |
| CFS-2859 | - South Carolina Landings, February 1962, 2 pp. |
| CFS-2861 | - Packaged Fishery Products, 1961, Annual Summary, 5 pp. |
| CFS-2863 | - Industrial Fishery Products, 1961, Annual Summary, 9 pp. |
| CFS-2865 | - Fish Meal and Oil, February 1962, 2 pp. |

Sep. No. 647 - Fish Protein Concentrate--A High Quality Animal Protein.

Sep. No. 648 - Rat-Feeding Studies To Determine Presence of Antimetabolites, Water-Soluble Vitamins, and Essential Minerals in Raw Menhaden as Compared with Raw Haddock and Beef.

Sep. No. 649 - Equipment Note No. 12--A New Scallop Trawl for North Carolina.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIAL OFFICE MENTIONED.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market

Data, February 1962, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, sardines, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; Oregon and Washington receipts (domestic and imports) of fresh and frozen tuna and tunalike fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, January, February, March 1962, 10 pp. each, illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Loma Station, San Diego 6, Calif.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna fishing industry and marine scientists; for the months indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, March 1962, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, March 1962, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

New England Fisheries--Monthly Summary, March 1962, 22 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Review of the principal New England fishery ports. Presents data on fishery landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary

wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the month indicated.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, March 1962, 6 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle 4, Wash.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl receipts reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ALGAE:

"Algae Feeding in Humans," by R. C. Powell, E. M. Nevels, and M. E. McDowell, article, *Journal of Nutrition*, vol. 75, September 1961, pp. 7-12, printed. *Journal of Nutrition*, American Institute of Nutrition, 36th Street at Spruce, Philadelphia 4, Pa.

"Nutritional Value as Protein of Some of the Nitrogenous Constituents of Two Marine Algae, *Chondrus crispus* and *Laminaria digitata*," by B. A. Larsen and W. W. Hawkins, article, *Journal of the Science of Food and Agriculture*, vol. 12, July 1961, pp. 523-529, printed. *Journal of the Science of Food and Agriculture*, Society of Chemical Industry, 14 Belgrave Square, London, SW1, England.

"Paper-Chromatographic Separation of Chlorophylls and Carotenoids from Marine Algae," by S. W. Jeffrey, article, *Biochemical Journal*, vol. 80, August 1961, pp. 336-342, printed. *Biochemical Journal*, Cambridge University Press, Bentley House, 200 Euston Rd., London NW1, England.

"A Study on a New Acidic Compound Isolated from Volatile Portion of a Green Alga, *Ulva pertusa*," by Teruhisa Katayama and Tetuo Tomiyama, article, *Journal of the Faculty of Agriculture, Kyushu University*, vol. 9, January 31, 1950, pp. 271-274, printed. *Journal of Agriculture*, Kyushu University, Fukuoka, Japan.

ALGINIC ACID:

"Alginic Acid, Its Compounds, Their Properties and Possibilities of Usage," by H. Maass. *Chemical Abstracts*, vol. 55, August 7, 1961, 15835f, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

AQUATIC ORGANISMS:

A Bibliography: Effects of External Forces on Aquatic Organisms, by Frank J. Schwartz, Contribution No. 168, 85 pp., printed. Chesapeake Biological Laboratory, Solomons, Md., January 1961.

AUSTRALIA:

Fishing and Whaling, Australia, Statistical Bulletin No. 7, 21 pp., illus., processed. Commonwealth Bureau of Census and Statistics, Canberra, Australia. This is the seventh of a series of annual statistical bulletins dealing with the fishing and whaling industry. Statistics relate to the year 1960-61 for general fisheries, to the 1960 season for pearl-shell and trochus-shell fisheries, and to the 1961 season for whaling, with comparative data for the previous four years. The bulletin is divided into four parts. Part I deals with general fisheries including those for fish, crustaceans, and molluscs (edible products). Part II includes fisheries for pearl shell and trochus shell (inedible products). Part III covers the operation of the whaling industry in Australia and Norfolk Island. Part IV shows particulars of overseas trade in the products of fishing and whaling.

The Implications of the Introduction of European Carp into Victorian Waters, 119 pp., processed. Fisheries and Wildlife Department, Victoria, Australia, February 1, 1962. This review was prepared as Departmental evidence to be presented before the State Development Committee which was requested by the Government of Victoria, to inquire into matters associated with the introduction of European carp into Victorian waters. It covers the influence of carp on fresh-water fisheries, including competition for space and influence of feeding by carp on the environment and on other fish; and the influence of European carp on wildlife. It discusses the propagation of European carp and whether or not it should be discouraged or completely prohibited, and whether or not all European carp, wherever occurring in Victoria, should be destroyed. Draft is included of the legislation which would meet the situation if the necessity for the destruction of European carp is accepted. Other questions concerning the introduction of European carp into Victorian waters are also discussed.

AUSTRIA:

Seenschutz (Lake Protection), by Georg Beurle and others, 96 pp., printed in German. (Reprinted from *Osterreichischen Wasserwirtschaftsverbandes*, vol. 43.) Springer-Verlag, Wien, Austria.

BACTERIOLOGY:

Bacteriological Studies of Commercial Shellfish Operations on the Gulf Coast, by M. W. Presnell and C. B. Kelly, Technical Report F61-9, 55 pp., illus., printed. Robert A. Taft Sanitary Engineering Center, Public Health Service, Cincinnati, Ohio, 1961. Describes the results of bacteriological examinations of water, oyster, and bottom-deposit samples collected simultaneously in four representative commercial shellfish-producing areas on the Gulf Coast. The general objectives were to determine: (1) oyster/water coliform relationships in natural environments; (2) degree to which Gulf Coast shellfish and shellfish waters complied with current recommended bacteriological criteria; and (3) potential of bottom deposits as contributors to the coliform content of water and oysters.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

BIOCHEMICAL ANALYSIS:

"Comparative Biochemical Data for Some Fresh-Water Invertebrates and Fish," by A. V. Ananichev, article, *Biokhimiia* (Biochemistry), vol. 26, July-August 1961, pp. 16-26, printed. *Biokhimiia* (Biochemistry), Izdatelstvo Akademii Nauk SSSR, Moscow, U.S.S.R.

BIOCHEMISTRY:

"Biochemical Studies on the Growth and Maturation of Fish. XI--Content of Molybdenum and Nickel in the Liver of Tuna and Marlin," by Tadao Morio and Akimi Suzuki, *Chemical Abstracts*, vol. 55, May 15, 1961, 9703g, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Biochemical Studies on the Liquefaction of Fish Body. I--On Basic Conditions for the Liquefaction; II--On the Effectiveness of 'Solubilized Fish' to the Growth of a Plant, *Lemna paucicostata* Hegelm," by Tetuo Tomiyama and others, article, *Science Bulletin*, vol. 13, November 1951, pp. 297-312, printed in Japanese with English summary. *Science Bulletin*, Faculty of Agriculture, Kyushu University, Fukuoka, Japan.

"Comparative Biochemical Studies on Cytochromes and Related Substances of Invertebrates. I--Cytochrome Components and Electron Transfer in Fresh-Water Mussels," by Kiyozo Kawai, article, *Journal of Biochemistry*, vol. 29, May 1961, p. 427, printed. *Journal of Biochemistry*, Dept. of Biochemistry, Faculty of Medicine, Tokyo University, Bunyoku, Tokyo, Japan.

BYPRODUCTS:

"The Recovery of Fish By-Products in the Interior," by E. Kraack, article, *Fischereiforschung*, vol. 3, no. 7, 1960, p. 24, printed. Institut für Hochseefischerei und Fischverarbeitung, Rostock-Marienehe, E. Germany.

CALIFORNIA:

The Marine Fish Catch of California (For the Year 1960), *Fish Bulletin* No. 117, 47 pp., illus., printed. California State Fisheries Laboratory, Terminal Island, Calif., 1961. A summary of the 1960 landings of fish, mollusks, and crustaceans in California by commercial fishing vessels or shipped into the State for processing. Statistical data cover annual landings and shipments, 1916-1960; landings and shipments of leading species by pounds and value; licensed commercial fishermen; number of fishing vessels by length; origin of shipments; origin of commercial fish landings; and monthly landings and shipments, statewide and by areas. Also included are data on value and quantity of annual landings by areas; value of landings by ports and areas; sport catch, 1951-1960; and live bait catch. It also contains a listing of common and scientific names of fish, crustaceans, and mollusks in the 1960 commercial catch.

CANNING:

"Canning of Frozen Sea Perch," by A. L. Petelina, S. A. Artjuhova, and K. I. Volkova, article, *Rybnoe Khoziaistvo*, no. 10, 1960, pp. 64-66, printed in Russian, *Rybnoe Khoziaistvo*, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, Russia.

CHEMICAL CHANGES:

"Changes in the Recalcification and Fibrinolysis Times in Atherosclerotic and Normal Subjects After Single Ingestion of Saturated and Unsaturated Animal Fats," by Jerzy Gajewski, *Chemical Abstracts*, vol. 55, July 10, 1961, 13619d, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

CHEMISTRY:

"Alterations in Glycogen, Glucose, and Lactate in Rainbow and Kamloops Trout, *Salmo gairdneri*, Following Muscular Activity," by E. C. Black and others, article, *Journal of the Fisheries Research Board of Canada*, vol. 17, July 1960, pp. 487-500, printed. Fisheries Research Board of Canada, West Block, Ottawa, Canada.

"Glycogen Content in the Flesh of Fish, Crustaceans, and Mollusks," by P. V. Kizeveter, *Chemical Abstracts*, vol. 55, May 15, 1961, 9704g, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Studies on the Physiological Chemistry of Phosphorus Compounds in Fish Muscle. IV--On the Seasonal Variation of Phosphorus Compounds Content; V--Quantitative Differences of Phosphorus Compounds in Muscle of Fish Reared in Different Water Temperatures," by Tomoo Nakano, articles, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 27, February 1961, pp. 147-149, and vol. 27, April 1961, pp. 357-363, respectively, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-ku, Tokyo, Japan.

COD:

"Nucleotide Degradation in Frozen Cod (*Gadus calarias*)," by N. R. Jones and J. Murray, article, *Biochemical Journal*, vol. 80, August 1961, p. 26P-27P, printed. *Biochemical Journal*, Cambridge University Press, Bentley House, 200 Euston Rd., London NW1, England.

COLD STORAGE:

"Storage of Frozen Fish Glazed by the Addition of Antioxidants," by R. R. Perepletchik and E. I. Novikova, article, *Technology of Fish Processing* (Israel Program of Scientific Translations, 1960, pp. 135-141). (Translated from the Russian *Trudy VNIRO*, vol. 35, 1958, pp. 152-158.) *Trudy VNIRO*, Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

CONSUMPTION:

Method of Preparing Fish for Consumption, by L. K. Anderson, P. E. Jann, and E. H. Carruthers, U. S. Patent 2,954,298, September 27, 1960. U. S. Patent Office, Washington 25, D. C.

CONTAINERS:

"Polybags and Plastic 'See-Through' Containers Used By More Fish and Seafood Packers," article, *Quick Frozen Foods*, vol. 24, September 1961, pp. 111-114, printed. *Quick Frozen Foods*, E. W. Williams Publications, Inc., 82 Wall St., New York 5, N. Y.

CRUSTACEANS:

"Humane Killing of Crustaceans," article, *Science*, vol. 135, no. 3503, February 16, 1962, pp. 587-593,

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printed. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington 5, D. C. A number of letters are published here which comment, both pro and con, on a recent article in which the author advocates the humane killing of crabs in the home and on a commercial basis.

DECOMPOSITION:

"Chemical Indexes of Decomposition in Ocean Perch," by Fred Hillig, L. R. Shelton, Jr., and J. H. Loughrey, article, Journal of the Association of Official Agricultural Chemists, vol. 44, August 1961, pp. 488-493, printed. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington 4, D. C.

"Chemical Indexes of Decomposition in Pollock and Whiting," by Fred Hillig and others, article, Journal of the Association of Official Agricultural Chemists, vol. 44, August 1961, pp. 499-507, printed. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington 4, D. C.

DENMARK:

Fiskeriaarbogen, 1962 (The Fisheries Yearbook, 1962), vol. 69, December 1961, 797 pp., illus., printed in Danish, 12 kroner (US\$1.74). Iver C. Weibach & Co., Amaliegade 30, Copenhagen, Denmark. A comprehensive collection of information on navigation, fishery rules and regulations, inspection, etc., primarily for Danish fishermen. It is issued annually by the Ministry of Fisheries about the first of the year, and should not be confused with the Ministry's annual Fisheries Report. The major sections of the Yearbook cover tables for navigation, courses, and distances; regulations for sailing, lights, harbors, radio, etc.; laws and regulations on the fisheries; register of fishing vessels; laws and regulations on vessel inspection, construction, equipment, etc.; vessel inspection and quarantine regulations; accident insurance, etc.; loans to fishing vessels and the industry; hunting regulations; instructions regarding shipwrecks and accidents; fishery organizations - names and addresses; miscellaneous data on fish names, market sizes, conversion tables of length, area, weight, etc.; and problems of current interest: "Fish and Fishing Conditions in Greenland Waters" & "Requirements for Fishing in Greenland."

EXPORTS:

Preparing Shipments to Mexico, WTIS Part 2, Operations Report No. 61-88, 12 pp., printed, single copy 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., revised February 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A report giving information on the preparation of shipments for export to Mexico. It covers the preparation of shipping documents, information on labeling and marking, customs procedures, and related subjects.

FACTORYSHIP:

"A Floating Fish Cannery," by S. S. Vershinin, article, National Lending Library Translations Bulletin, vol. 4, no. 2, February 1962, pp. 153-162, printed, 4s. (about 56 U. S. cents). (Translated

from the Russian, Rybnoe Khoziaistvo, vol. 7, 1961, pp. 17-22.) NLL Translations Bulletin, Her Majesty's Stationery Office, P. O. Box 569, London S.E.1, England. Discusses the need for floating fish canneries in U.S.S.R. in view of the development of the fisheries, and the construction of a series of these vessels under the seven-year plan. Describes in detail the functions of the first vessel of the series Andrei Zakharov which was built in 1960. The cannery is divided into the following sections by functions: receipt and storage of fish, sorting, washing and packing, closing and sealing, the autoclave section, and the section for preparing the canned goods for sale. The waste from production is treated in a special byproducts plant.

FATTY ACIDS:

"Egg Lipids of a Carp, *Cyprinus carpio*. I - Fatty Oil from Carp Egg; II - Lecithin from Carp Eggs," by Hisanao Igarashi, Koichi Zama, and Muneco Katada, articles, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, March 1960, pp. 326-329, vol. 26, November 1960, pp. 1128-1130, respectively, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

"Studies on the Action of Fish Components. III-The Antibiotic Action of Methyl Esters of Unsaturated Fatty Acids," by Yukio Tomiyasu and Masamichi Toyomizu, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 18, no. 12, 1953, pp. 683-686, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

FISHERIES RESEARCH:

Experts Engaged in Fisheries Research in the Council's Area (Appendix to Report of the 49th Meeting of the International Council for the Exploration of the Sea, Copenhagen, October 1961), 14 pp., printed. International Council for the Exploration of the Sea, Charlottenlund Slot, Charlottenlund, Denmark, March 1962. A list of experts engaged in fisheries research in the Council's area by name, title, address, and subject under Belgium, Denmark, Finland, France, Germany, Ireland, Iceland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, United Kingdom, and U.S.S.R.

FISHERY OCCUPATIONS:

Training Programs for Fishery Occupations, OE-84025, 61 pp., printed, single copy 20 cents. U. S. Department of Health, Education, and Welfare, Washington, D. C., 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This publication provides information for the organization and operation of a training program for fishery occupations. Included is material to aid the vocational educator in establishing contact with agencies concerned with manpower development for the industry. Increased emphasis on training for the fishing industry stems from the challenge of international competition for the market, as well as utilization of new equipment, new processes, and new techniques in the location of fish, in shipboard refrigeration and preservation, in processing on shore and afloat, and in packaging for distribution. Legislation in the interest of the fishing in-

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dustry provides for vocational education in the trade and industrial and the distributive occupations of the fishing industry. Although this publication does not make suggestions relating specifically to distributive education, some of the basic information and procedures could apply to this field of training as well.

FISH FLOUR:

Fish Flour Technological Developments in South Africa, by G. M. Dreosti, R. P. Van der Merwe, and J. J. Dreyer, Paper No. R/V.2/3, printed. (Paper presented at the FAO International Conference on Fish in Nutrition, Washington, D. C., September 19-27, 1961.) Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

FISH MANAGEMENT:

North of Scotland Hydro-Electric Board (Annual Report and Accounts, 1961), 83 pp., illus., printed, 5s. 6d. (76 U. S. cents). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, February 1962. A complete report of the activities of the North of Scotland Hydro-Electric Board during 1961. The section on Development and Research includes information on new fish devices designed by the Board's Research Laboratory, and the Appendix contains statistics on fish movements at various dam sites.

FISH MEAL:

The Effect of Fish Meal on the Hatchability of Hens' Eggs (Thesis submitted to the University of Reading for the degree of Master of Science, 1959-60), by R. S. Martin, Registrar, University of Reading, Berks, United Kingdom.

"Effect of Supplementing with Methionine, Cysteine and Derivatives of Thiazolidine-4-Carboxylic Acid on the Nutritive Value of Herring Meal Protein," by L. R. Njaa, article, *Journal of the Science of Food and Agriculture*, vol. 12, 1961, p. 757, printed. The Society of Chemical Industry, 14 Belgrave Square, London SW1, England.

"Nutritive Quality of Fish Meal To-day," by R. Berglund, article, *Feedstuffs*, vol. 33, April 1, 1961, p. 14, printed. Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

"Trials With Rancid Herring Meal Fat," by B. Laksevela, article, *Meldinger SSF*, p. 7, January 1961, printed. Sildolie og Sildmelindustriens Forskningsinstitutt, Damsgard, Bergen, Norway.

"Value of Menhaden Fish Meal as a Protein Supplement to Practical Swine Diets. I," by R. R. Kifer and E. P. Young, article, *Journal of Animal Science*, vol. 20, 1961, p. 938, printed. American Society of Animal Production, Colorado State University, Fort Collins, Colo.

FISH OIL:

"Dietary Marine Fish Oils and Cholesterol Metabolism. III--The Comparative Hypocholesterolemic Activities of Fish Oil and Vitamin A," by J. D. Wood and J. Topliff, article, *Journal of the Fisheries Research Board of Canada*, vol. 18, 1961, p. 377, printed.

ed. Fisheries Research Board of Canada, West Block, Ottawa, Canada.

"Effect of Various Oils and Fats on Serum Cholesterol in Experimental Hypercholesterolemic Rats," by R. Nicholayson and R. Ragard, article, *Journal of Nutrition*, vol. 73, 1961, p. 299, printed. American Institute of Nutrition, 36th Street at Spruce, Philadelphia 4, Pa.

"Effects of Ethyl Arachidonate, Cod-Liver Oil, and Corn Oil on the Plasma-Cholesterol Level. A Comparison in Normal Volunteers," by K. J. Kingsbury and others, article, *Lancet*, vol. 1, 1961, p. 739, printed. Lancet, Ltd., #7 Adam St., Adelphi, London, W.C. 2, England.

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FISH POPULATIONS:

Fitting a von Bertalanffy Growth Curve by Least Squares (Including Tables of Polynomials), by Patrick K. Tomlinson & Norman J. Abramson, *Fish Bulletin* No. 116, 70 pp., illus., printed. California Department of Fish and Game, 987 Jedsmit Dr., Sacramento 19, Calif., 1961. Data presented in the report is useful in studies of fish population dynamics and for the practical assessment of the status of exploited stocks and the effects of fisheries regulations.

FISH SKINNING:

Fish Skinning Apparatus, by L. Saville, British Patent 875,452. *British Food Manufacturing Industries Research Association Abstracts*, vol. 14, Abstract 1672, p. 433, October 1961.

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Annual Report Fiscal Year 1960-1961 of the Division of Fish and Game, 24 pp., illus., printed. (Reprinted from Report of the Department of Agriculture and Conservation, State of Hawaii. Department of Agriculture and Conservation, Division of Fish and Game, Honolulu, Hawaii. The program of the Division of Fish and Game is aimed toward the development and management of the State's fish and wildlife resources to accrue maximum sustained benefits to the public. This publication discusses the notable advances which were made in the exotic game bird, game mammal and fish introduction programs as well as in the fish and wildlife research programs during the reporting period. Included are statistical tables presenting data on fish landings, fish catches by species, fishing and game licenses, permits and sales, fish and game violations, arrests, etc.

INTERNATIONAL COMMISSIONS:

(North Pacific Fur Seal Commission) Proceedings of the Fourth Annual Meeting, January 30-February 4, 1961, Tokyo, Japan, 39 pp., processed. Secretary, North Pacific Fur Seal Commission, Department of the Interior, Washington 25, D. C., January 1962. The North Pacific Fur Seal Commission was established in January 1958, during a meeting held in Washington, D. C. The Commission was organized pursuant to the Interim Convention on Conservation of North Pacific Fur Seals, signed in Washington, D. C., on February 9, 1957, by the Governments of Canada, Japan, the U.S.S.R., and the United States. The Convention came into force on October 14, 1957. This report contains a summary of the proceedings of the Fourth Annual Meeting, a report of the Standing Scientific Committee, a list of participants attending the meeting, administrative report of the Secretary to the Fourth Meeting, and summaries of fur-seal investigations during 1960 and plans for fur-seal investigations during 1961.

ISRAEL:

Fishermen's Bulletin, vol. 3, no. 10 (30), December 1961, 48 pp., illus., printed in Hebrew. Fishermen's Bulletin, P.O.B. 699, Haifa, Israel. This bulletin contains, among others, the following articles: "Fishing with Lights During the Year 1961," by A. Ben-Tuvia; "Factors Affecting the Size of Demersal Fish

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Stocks in the Eastern Mediterranean," by E. Gilat; "The Maiden Voyage of the Fishing Vessel *Daguite II*," by Z. Fried; "The Largest German Stern-Trawl-er Burgermeister Smidt," by J. Bejerano; "Experimental Long-Line Fishing Off the Israeli Coast," by R. Paldi; and "Experimental Trawl Fishing in the Eastern Mediterranean," by A. Tzur.

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LIBERIA:

Annual Report on the Operation of the Department of Agriculture and Commerce, Fiscal Year 1960-1961, by Stephen Tolbert, 67 pp., processed. Department of Agriculture and Commerce, Monrovia, Liberia. Contains a summarization of progress within the three main Divisions of the Department (Agriculture, Commerce, and Labor) and presents the reflection of the problems, the nature of their thinking in respect to the solution of these problems, and the extent to which planned solutions are being implemented. Information and statistics on the fisheries of Liberia are included in the section on the Division of Agriculture. These data cover fish production for the years 1956-1960, classification of fisheries, licenses issued, and total fish landed during the year.

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"Lowering of Serum Cholesterol Level in Rats by Intraperitoneal Cod-Liver Oil," by Fredrik C. Gran and Ragnar Nicolaysen. Chemical Abstracts, vol. 55, October 30, 1961, 22617g, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

MARINE AIDS:

List of Lights and Other Marine Aids, vol. I--Atlantic Coast, St. Croix River, Me., to Little River, S. C., CG-158, 593 pp., illus., printed, \$3.50; vol. II--Atlantic and Gulf Coast, Little River, S. C., to Rio Grande, Texas, and the Antilles, CG-160, 507 pp., illus., printed, \$3. Superintendent of Documents, Government Printing Office, Washington 25, D. C., 1962. These volumes list the lights and other marine aids to navigation maintained by or under authority of the U. S. Coast Guard on the Atlantic and Gulf Coasts of the United States, including the United States West Indies. The first volume covers the First, Third, and Fifth Coast Guard districts, and the second volume covers the Seventh and Eighth Coast Guard districts. These lists are intended to furnish more complete information concerning aids to navigation than can be conveniently shown on charts. They are not intended to be used in navigation in the place of charts and coast pilots.

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The Biological Bulletin, vol. 122, no. 1, February 1962, 184 pp., illus., printed. Marine Biological Laboratory, Woods Hole, Mass. The bulletin contains, among others, the following articles: "Survival and Growth of Larvae of the European Oyster, *O. edulis*, at Lowered Salinities," by Harry C.

Davis and Alan D. Ansell; "Freezing Resistance in Some Northern Fishes," by Malcolm S. Gordon, Ben H. Amdur, and P. F. Scholander; "Gametogenesis and Spawning of the European Oyster, *O. edulis*, in Waters of Maine," by V. L. Loosanoff; and "The Polychaete *Ceratonereis tridentata* as a Pest of the Scallop *Aequipecten gibbus*," by Harry W. Wells and Mary Jane Wells.

"Proposed Marine Biological Laboratory," by James E. Rice, article, Alabama Conservation, vol. 32, no. 7, December-January, 1961-62, pp. 14-15, illus., printed. Alabama Department of Conservation, 64 No. Union St., Montgomery 4, Ala. Discusses the need of a Marine Biological Laboratory in Alabama in order to increase the present limited and erratic production of shrimp and oysters and to train skilled personnel in this field of science.

MARKETING:

Marketing of Fish in India, 1961, 3rd edition, 228 pp., illus., printed, 7Rs. or 11s. (about US\$1.50). Directorate of Marketing & Inspection, Ministry of Food & Agriculture, Nagpur, India. Contains detailed information on production, utilization, cost of marketing, and prices of fish in India for the period 1951 to 1957. Also gives data on marine fish catches, and imports and exports for 1958 and 1959. The report also furnishes information about the measures being taken by the Government of India to improve the economic conditions of the fishermen, increase fish production, and organize fish trade along proper lines.

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United States Coast Pilot 5--Gulf Coast, Puerto Rico, and Virgin Islands (Fourth Supplement), 23 pp., printed. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., January 1962. Changes reported to C&GS from date of edition through Notice to Mariners 1 of January 6, 1962.

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"The Fecundity of Plaice from the Coasts of Norway," by T. B. Bagenal, article, Journal of the Marine Biological Association of the United Kingdom, vol. 42, no. 1, February 1962, pp. 105-112, printed, 28s. (US\$4.75). Journal of the Marine Biological Association of the United Kingdom, The Syndics of the Cambridge University Press, Bentley House, 200 Euston Rd., London, NW1, England.

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A Literature Survey on the Effects of Ionizing Radiations on Sea Foods with Respect to Wholesomeness Aspects, by S. A. Miller and others, TID-11610, 39 pp., processed, 75 cents. Department of Nutrition, Food Science and Technology, Massachusetts Institute of Technology, Cambridge 39, Mass. (Available from the Office of Technical Services, Department of Commerce, Washington 25, D. C.)

Outline of Projects to Determine the Feasibility of Radiation Preservation of Marine Products, by J. T. R. Nickerson and others, TID-6700, 88 pp., processed, \$2. Department of Food Technology, Massachusetts Institute of Technology, Cambridge 39, Mass. (Available from the Office of Technical Services, Department of Commerce, Washington 25, D. C.)

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Refrigeration Engineering (A Source Book of Soviet Literature 1923-1955), by D. N. Prilutskii, 294 pp., printed (translated from Russian), single copy \$3.00. State Publishing House for Books on Trade, Moscow, U.S.S.R., 1956. (For sale by the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.). This is a "Source-book" for the Soviet journal *Kholodil'naya Tekhnika* (Refrigeration Engineering) which is U.S.S.R.'s principal periodical publication dealing with problems of technical production and use of refrigeration in the U.S.S.R. This is the only bibliographical work in the field of Soviet refrigeration and should, therefore, be of great benefit to scientific and engineering technical workers in this field. The "Source-book" indicates articles on the problems of the technique of production, the use of cold, and the design and technical operation of refrigerating plants that have been published in various journals. Divided into these three parts (each includes an independent index of authors): Technical operation and design of refrigerating plants; refrigeration industry, refrigerated transport of food products, and the use of refrigeration in various branches of the national economy; and the technique of refrigeration, and air conditioning.

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SMALL BUSINESS MANAGEMENT:

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THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM

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TRANSPORTATION:

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PREVENTATIVE MAINTENANCE HELPS ASSURE PROPER OPERATION OF OUTBOARD MOTOR

Fitting out your outboard motor for the spring will give you a trouble-free season if you check out a few basic points before your first launching. Follow the instructions in the owner's manual to insure that the motor is ready to perform at its best from the start of the season.

With the motor either on a boat or a stand, check the lower unit first. Following the instructions in the owner's manual, remove the propeller nut, drive pin, and propeller.



Fig. 1 - Propeller should be checked for nicks or bent blades. A slightly off-pitch propeller can seldom be detected by casual observation, but can seriously affect the performance of an outboard motor. Suspected prop damage should be checked with marine dealers.

Check the propeller for nicks or bent blades. If the nicks are minor they can easily be repaired at home or by having your marine dealer check the pitch and blade area on a pitch block. A slightly off-pitch propeller can rarely be detected by casual observation, but will affect the performance of your motor. Next place a light coat of grease on the propeller shaft before replacing the propeller. Replace the drive pin and install a new cotter pin.

Then drain and refill the gearcase with the proper lubricant according to the manufacturer's recommendations.



Fig. 5 - Proper torque of spark plugs is essential when fitting the outboard motor for a season of use. Most marine dealers are equipped to properly tighten spark plugs.

Proper torque for spark plugs is as important as the proper tightening of screws, bolts, nuts, and studs throughout the entire motor. The manufacturer's specifications should be fully complied with.

One of the most important functions, and one many owners neglect, is applying the proper lubricant to all recommended grease fittings. If the correct grease is not used, serious damage to the motor can result.

The final preparation is cleaning the motor and touching up scratched areas with matching paint.

Boat owners unfortunate enough not to run out of gas as the nose of their boat touched dock for the previous season should forget about using old gas for a new season.

The outboard motor fuel tank should be cleaned inside and out, and all gum, varnish, and residue should be removed. Gasoline left in the tank for a long period of time (several weeks) will cause difficult starting and can lead to spark plug failure.

Should any questions of difficulties arise about the condition of the motor during fitting out, take the motor to the dealer.

--Ernst Ott, Outboard Marine International, S. A.
Nassau, Bahamas.



Fig. 2 - Spring fitting out of outboard motor should include the draining and refilling of the gearcase with the proper lubricant according to the manufacturer's specifications. Use of the incorrect lubricant may cause serious damage to the motor.

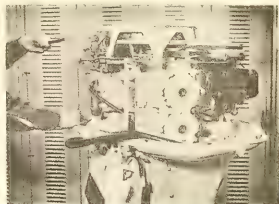


Fig. 3 - After a winter of storage, a general cleaning of the outboard motor's powerhead is desirable. After the spark plugs are removed, the flywheel should be rotated by hand. This removes excess cylinder oil and coats the cylinder walls.

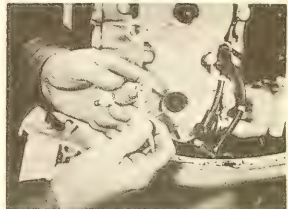


Fig. 4 - Check the spark plugs carefully. If they are clean and the porcelain around the center electrode is a light brown color, the plugs are all right. It's a good idea to keep an extra set of spark plugs in the boat and check for proper gap before installation.



Fig. 7 - Final preparation in the fitting out of the engine for a season of service is cleaning the motor and touching up scratched areas with matching paint.

Fig. 6 - One of the most important functions in the spring fitting out of a motor is applying the proper lubricant to all recommended grease fittings. Use of the lubricant specified by the engine manufacturer is essential to the proper operation of the motor.

The powerhead will require a little servicing if the motor was prepared properly for off-season storage. A general cleaning of the powerhead, however, is desirable. After removing the spark plugs, slowly rotate the flywheel by hand. This not only removes any excess oil from the cylinders, but coats the cylinder walls properly.

Check the spark plugs carefully. If they are clean and the porcelain around the center electrode is a light brown color, the plugs are all right.

It's usually a good idea to keep an extra set of new spark plugs. Make sure they are specified for use in your motor by the engine manufacturer and check for proper spark-plug gap before installing.

FISH NUTRITION

Here is a well rounded story on the nutritive qualities of fish.

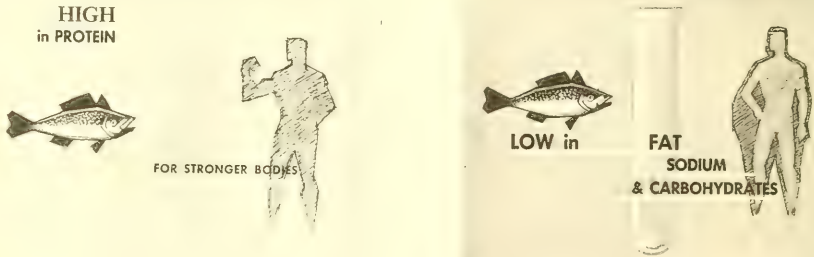
The average American eats only about 10 pounds of fish a year, according to the U. S. Bureau of Commercial Fisheries. Japanese and the Scandinavians eat four times as much. Only about 50 percent of all the fish caught in the United States is used for food.

Nutritionally speaking, fish have much in their favor:

1. Most fish are 18-20 percent protein, about the same as meat and the protein is of a very high quality.

2. Most varieties are low in fat--less than 1 percent--thus being moderately low in calories. Fish such as cod, haddock, ocean perch, flounder, and sole supply only about 80 calories (1 gram of fat and 18 grams of protein) for every 3- to 3½-ounce serving.

3. The varieties with more fat in them have an important characteristic. Fish oil is a highly unsaturated oil and compares favorably with some vegetable oils in its ability, under certain conditions, to lower the level of cholesterol in the blood. Moderately fat fish (2-5 percent), such as trout, pickerel, catfish, bluefish, halibut, swordfish, supply about 125 calories per serving. The so-called high fat fish (8-15 percent) are still fairly modest in calories. Mackerel, salmon, sardines, pompano, herring, average from 180 to 200 calories for each serving. These "fat" fish also have a considerable amount of vitamin A.



4. Shellfish--oysters and clams in particular--are good sources of iron.

5. Fish with soft bones which you can eat such as sardines and canned salmon are high in calcium and fluorine, the tooth decay-preventing mineral nutrient.

In spite of all these attributes, as a nation, we aren't much interested in fish. The chief problems seem to be:

1. Many people think fish must be fresh to be enjoyed. Better freezing methods are making it possible for the Middle West in particular to have a steady supply of high-quality fish.

2. Fish has been designated in most minds as "Friday" food.

3. Unless fish is prepared with care and imagination, it can be pretty dull stuff. The flavor is monotonous. But fish prepared with a judicious use of herbs and a gentle touch is a real gourmet delight.

Fish makes nutritional sense. And economy is a factor; many types of fish will fit almost any budget.

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A4463X Fishes

COMMERCIAL FISHERIES REVIEW



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JULY 1962

FISH and WILDLIFE SERVICE
United States Department of the Interior
Washington, D.C.



COMMERCIAL FISHERIES REVIEW



A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor

Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

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5/31/63

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CHICAGO RECEIPTS OF FRESH AND FROZEN FISHERY PRODUCTS, AND WHOLESALE MARKET TRENDS, 1961

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SUMMARY

Receipts of fresh and frozen fish and shellfish at Chicago in 1961 amounted to slightly more than 78 million pounds. The 10-percent drop from the previous year was largely confined to fresh-water fish receipts which were lower for a number of lake and river species. The 1961 Great Lakes production probably would surpass the previous year, but this was only because of increased industrial fish landings. With few exceptions, the commercial food fish catch from the Great Lakes was expected to be lower for most of the higher-priced species, with the slack taken up or exceeded by several varieties not presently used as food fish.

Frozen salt-water fish receipts in 1961 at Chicago were lower for halibut, several varieties of domestically-produced groundfish fillets, whiting, and sablefish, but were up for a number of species including fresh and frozen red snapper, and frozen fillets and steaks of swordfish. The lower receipts of certain frozen ocean fish varieties was partly due to a drop in 1961 landings coupled with the increased trend toward prepared and semiprepared fishery products and specialties that gain more consumer acceptance each year.

Receipts of selected shellfish products at Chicago held up well in 1961. Despite the drastically reduced 1961 shrimp landings, receipts of frozen raw headless shrimp dropped only slightly from the previous year because of increased receipts of the imported product. Receipts of frozen breaded and other processed shrimp at Chicago reached a new record high in 1961.

Fresh-water fish receipts of nearly 33 million pounds in 1961 dropped 12 percent from the previous year. Leading species were whitefish, chubs, buffalofish, and yellow pike which ranked in about the same order as the previous year. Receipts were lower for practically

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Note: Information on receipts of fishery products is based on data collected daily by the Chicago Fishery Market News Service Office from wholesale dealers (including smokers) and from other distributors in the Chicago area.



Fig. 1 - Chicago is an important distribution center for Great Lakes fresh-water fish as well as salt-water fishery products. For fishery products, it is the gateway to the Midwest.

all of the more choice fresh (iced) lake fish varieties, including lake trout, whitefish, and yellow pike. The year's receipts of those preferred and generally higher-priced species, however, did not decline as much as those of the coarse fish, which as a group dropped 20 percent from 1960. Receipts were much lower than the previous year for both carp and sheepshead varieties that now find much less consumer preference at Chicago. Buffalohead receipts of more than 4 million pounds dropped only slightly from the record high arrivals of 1960. Receipts of that species were unusually heavy in 1960, and while in the forefront during 1961, were displaced by chubs which were surpassed only by whitefish, a perennial favorite that still stands out as the mainstay of fresh-water fish supplies at Chicago.

Table 1 - Receipts of Fresh and Frozen Fish and Shellfish at Chicago, 1961-60 and Changes from 1960

Year	Fresh-Water Fish		Salt-Water Fish		Shellfish, Etc.		Total	
	1,000 Lbs.	% of Total	1,000 Lbs.	% of Total	1,000 Lbs.	% of Total	1,000 Lbs.	% of Total
1961	32,670	42	21,993	28	23,450	30	78,113	100
1960	37,012	43	25,635	29	24,380	28	87,027	100
Change from 1960	-4,342	-12	-3,642	-14	-930	-4	-8,914	-10

FRESH-WATER FISH

Chicago receipts in 1961 of a group of low- to moderately-priced lake fish, including chubs, herring, and smelt, were up from the previous year. The increase was principally due to larger receipts of chubs (more than 5 million pounds for the year, about 20 percent more than in 1960 and exceeding Chicago's receipts of that species for each year since 1957. The bigger increase in the 1961 chub receipts was in deliveries from Michigan Lake Huron shippers, and a somewhat larger quantity from the Illinois commercial fishery. Despite the very good year in chub receipts, the fresh product was very scarce during the early months of 1961 when fishing was poor, and frozen stocks were nearly depleted. Low supplies and strong demand by smokers then resulted in the highest wholesale prices in several years. Fresh chub prices dropped sharply in the following months when landings started to improve.



Fig. 2 - Iced domestic and Canadian fresh-water fish stacked up inside a wholesale fish house in the Chicago Fulton Market area.

from shippers in Florida, North Carolina, and Virginia, who have been supplying the Chicago market to a greater extent than formerly. The demand for catfish in the Midwest ranged from very good to excellent during a good part of 1961, with wholesale prices often equal to, or exceeding, those of the most choice lake fish varieties.

While fresh-water fish receipts were lower for a number of the more familiar lake and river varieties marketed as round, drawn, or dressed fish, there were moderate to good increases for frozen brook trout, frozen fillets of lake trout, whitefish, and yellow perch, frozen smelt and sturgeon, and iced white bass from Lake Erie. Fishery receipts from Lake Erie production were of no great significance in 1961 and iced finfish supplies were largely carp, sheepshead, white bass, smelt, and some catfish. Canadian supplies originating from that Lake were very good for frozen smelt and yellow perch fillets, but were down substan-

Receipts of 1.6 million pounds of catfish were only slightly below 1960 arrivals. Receipts from Midwest-producing areas during 1961 were less than the previous year, but increased substantially from southern shippers who accounted for about 70 percent of the total catfish supplies received at Chicago. Receipts of catfish during 1961 were especially good

tially for round yellow perch. There were virtually no Lake Erie yellow pike available on the Chicago wholesale market.

Total receipts of round yellow perch from all sources compared favorably with 1960, but this was only because of increased supplies from Lake Michigan production and sizable gains in supplies from Canada's northern lakes. The demand and market conditions for round yellow perch and fresh or frozen fillets of that species were strongest during the early part of the year when wholesale prices were at their highest level because of extremely low supplies. Prices for round perch declined during the spring months when supplies increased, but again climbed to the higher level in midsummer when Great Lakes landings were light. Market conditions for frozen yellow perch fillets were very strong from the beginning of the year through August because of the scarcity of raw fish for filleting. Wholesale prices for any available stocks of frozen yellow perch fillets were unprecedentedly high throughout that period, but a sharp break occurred in September when lower-priced round fish were available for processing.

Table 2 - Chicago Fishery Products Receipts by Principal Species for 1961 and Percentage Change from 1960

Species	Quantity 1,000 Lbs.	Change from 1960 %	Species	Quantity 1,000 Lbs.	Change from 1960 %
Fresh-water fish:			Salt-water fish:		
Brook trout, frozen	381	+22	Cod, fresh 1/	10	0
Buffalofish, fresh	4,404	-13	fillets, frozen	1,240	-19
Bullheads, fresh	158	-44	Flounder & sole, fresh 1/	35	-38
Carp, fresh	1,481	-37	fillets, frozen	1,205	+12
Catfish, fresh	1,551	-5	Fish sticks, frozen	1,189	-10
Chubs, fresh	5,076	+18	Haddock, fresh 1/	18	-44
Lake herring, fresh	1,433	-24	fillets, frozen	1,068	-22
Lake trout, fresh	726	-32	Halibut, frozen	5,083	-13
frozen 1/	616	+20	fill, stks., & portions, frozen	1,306	-18
Menominee, fresh	24	0	Mackerel, fresh	32	-30
Pickeral, fresh	128	-14	frozen	92	+119
frozen 1/	379	-51	Ocean perch fillets, frozen	4,713	-16
Rock bass, fresh	7	-36	Pollock fillets, frozen	122	-52
Sauger, fresh	519	-21	Sablefish, frozen	356	-20
frozen 1/	38	+127	Salmon, fall, frozen	521	+14
Sheepshead, fresh	1,540	-26	king, fresh	26	-33
Smelt, fresh	703	-23	frozen	428	-24
frozen	353	+24	pink, frozen	6	-82
Suckers, fresh	312	-26	silver, fresh	11	-39
Sunfish, fresh	152	-15	frozen	973	+24
Tullibee, fresh	96	-1	fillets & steaks, frozen	64	-63
White bass, fresh	158	+28	Sea bass, fresh	12	-25
Whitefish, fresh	6,497	-15	Snapper, red, fresh	729	+3
frozen 1/	566	+24	frozen 1/	356	+21
Yellow perch, fresh	1,574	-13	Swordfish, fillets & steaks, frozen	203	+10
frozen 1/	376	+32	Whiting (H & G & fillets), frozen	1,482	-38
Yellow pike, fresh	2,862	-10	Wolfish fillets, frozen	458	-5
frozen 1/	290	-16	Other, fresh	200	-12
Other, fresh	96	-26	frozen	55	-69
frozen	174	-40	Total Salt-water	21,993	-14
Total Fresh-water	32,670	-12	Shellfish, etc. (Contd.):		
Shellfish, etc. 1			Scallops, frozen	936	-5
Clams, hard (in shell)	502	-9	Shrimp, raw, headless, frozen	9,460	-4
Crabs, soft, fresh	26	-24	breaded, etc., frozen	5,926	+5
Dungeness (cooked), froz.	51	-39	Spiny lobster tails, frozen	3,215	-12
Crab meat, fresh	88	-2	Squid, frozen	428	+116
frozen	199	-24	Other, fresh	98	-20
Frog legs, frozen	236	-24	frozen	394	+3
Lobsters (live)	182	+26	Total Shellfish, etc.	23,450	-4
Oysters, in shell	788	-27	Grand Total	78,113	-10
shucked, fresh	816	-7			
frozen	105	-39			

1/Includes fillets, steaks, etc.

Fresh and frozen yellow pike receipts at Chicago in 1961 amounted to slightly more than 3 million pounds, a 14-percent drop compared with 1960. The year's receipts of iced yellow pike were not much lower than in 1960, but there was a sharp drop in receipts of imported yellow pike fillets which was in part offset by a larger quantity of frozen drawn or dressed fish. Receipts of the iced product were quite substantial from Minnesota shipping points--Red Lake and the International Lakes region. Then there was nearly one million pounds from

Manitoba shippers--about the same quantity as the previous year--and good receipts from the Province of Alberta. The greatly reduced Lake Erie yellow pike landings were seen in the extremely light arrivals from Detroit wholesalers, and from Ohio and Ontario shippers. The upper peninsula provided little or no supplies of yellow pike during the year other than merely token deliveries that were far below the 1960 receipts from that area.

Yellow pike supplies at the Chicago market were readily available throughout the greater part of the year. Wholesale prices were high during the winter months but dropped to moderate levels with the appearance of seasonal supplies. Wholesale selling prices were especially low in June when market supplies were heavy, and declined even more during the fall months when supplies reached glut proportions.

SALT-WATER FISH

Fresh and frozen salt-water fish receipts of 22 million pounds in 1961 dropped for a number of species because of a decline in landings during the year. Landings in 1961 were lower for halibut, ocean perch, and whiting. Consequently receipts of those species at Chicago dropped. Frozen halibut again ranked as the principal species in that group at Chicago, followed by frozen ocean perch fillets, salmon, whiting, and various other frozen groundfish and other fillets both from domestic and foreign suppliers. Chicago has traditionally been a distribution center for frozen ocean fish fillets from New England, Canadian, and overseas suppliers. In 1961, however, Northwest packers of halibut, salmon, and sablefish shipped more Pacific ocean perch fillets and fillets of sole to Chicago. Receipts of frozen flounder and sole fillets were up from the previous year, standing out as a fishery product that was more readily available at low to moderate prices throughout most of the year, while other species of fillets were subject to periods of relative scarcity.

Frozen fish sticks, and fish portions in particular, were an important part of the Chicago supplies for the institutional trade during 1961. The demand for fish portions processed from species including halibut, swordfish, and red snapper, as well as from the various species of groundfish, has increased to the extent where frequently portion-control fishery products are preferred to regular fillets. Frozen groundfish fillets and halibut stocks were low at the beginning of 1961, and this resulted in increased sales of fish portions.

Supplies of most varieties of frozen salmon were much more abundant in 1961 as compared with the very light Northwest landings and low supplies of the previous year. The demand for frozen salmon at Chicago, however, was especially light during the early months of the year because of strong resistance to very high wholesale prices. Receipts of all varieties of frozen salmon in 1961 amounted to 2 million pounds which were about the same as in 1960. Much more frozen chum and coho salmon was received, but receipts were lower for frozen king (chinook) salmon and all varieties of the fresh product. The high 1960 frozen salmon prices at Chicago carried into 1961, but started to drop shortly after the beginning of the year. Prices continued their downward decline through the first half of the year. Wholesale selling prices for some varieties of frozen salmon dropped as much as 25 percent by the end of the first six months of 1961, a complete reversal of the strong and price-spiralling market during the same period the previous year. There was more buying interest in the last half of 1961 when market conditions improved to be a relatively steady level, and then firmed up considerably in the latter months of the year.



Fig. 3 - Portion of inside delivery room of wholesale firm in Chicago.

SHELLFISH

Chicago's shellfish receipts for the year were dominated by frozen shrimp and spiny lobster tails which combined accounted for 80 percent of the total 1961 receipts in that classi-

fication. Other leaders in that group included frozen sea scallop meats, fresh and frozen oyster meats, oysters in the shell, hard clams, and substantially increased receipts of frozen squid and live lobsters. New England suppliers provided the bulk of the live lobsters marketed at Chicago during the year. Receipts of that product from that region were more than double those in 1960, but were considerably lower from suppliers in the Canadian Maritime Provinces. But no doubt some of the live lobsters received from New England actually originated in Canada. The 1961 receipts of frozen scallop meats held near the one million pound mark, the same as in 1960. New Bedford landings of sea scallops during the year were even greater than in 1960--a banner catch year. Market conditions for that product were at a much more steady level during 1961. Wholesale selling prices at Chicago were lowest in July-August but did not drop to the lows of the same months in 1960 when market conditions for frozen sea scallops were nearly demoralized because of heavy supplies.

The notable increase in frozen squid receipts from West Coast shippers brought 1961 receipts up to nearly 0.5 million pounds. This was over 100 percent more than in 1960 and about the same as the 1959 receipts which were the highest in five years.

Market conditions at Chicago for other selected shellfish products were invariably strong during 1961, and wholesale selling prices for some items were believed at an all-time high. These included oysters which were in very short supply because of low production, spiny lobster tails which were even higher priced than in 1960 when preferred sizes were marketed at record high prices, and frozen shrimp. Because of low supplies, market conditions for frozen shrimp became progressively stronger during the last half of 1961 when wholesale selling prices were not far from the very high levels that prevailed in the years previous to 1959.

METHODS OF TRANSPORTATION

Truck transportation of fresh and frozen fishery products into the Chicago area during 1961 greatly outstripped other carriers. Rail express and rail freight carload arrivals of fresh and frozen fishery products for the year declined to 240 cars as compared with 320 carloads in 1960. The bigger and more pronounced drop was in car shipments from the Province of Alberta--only 19 cars in 1961 as against 78 in 1960 and 211 in 1959. The transition from rail express carload transportation to truck hauling of iced fresh-water fish was massive in the two-year period since 1959. Trucks hauled 85 percent of the more than 5 million pounds of fresh-water fish received at Chicago from the Province of Alberta during 1961.

Table 3 - Chicago Fishery Products Receipts by Methods of Transportation, 1961

Item	Truck		Express		Freight		Total	
	1,000 Lbs.	%	1,000 Lbs.	%	1,000 Lbs.	%	1,000 Lbs.	%
Total	60,979	100	7,770	100	9,364	100	78,113	100
By Major Classifications:								
Fresh-water	24,686	40	7,294	94	690	7	32,670	42
Salt-water	13,858	23	120	2	8,015	86	21,993	28
Shellfish, etc.,	22,435	37	356	4	659	7	23,450	30
By Origin:								
Domestic	49,131	81	7,021	90	1,975	21	58,127	74
Imported/	11,848	19	749	10	7,389	79	19,986	26

1/Includes "in bond" shipments through British Columbia of United States-caught fish landed in that Province, and also Alaska fish.

In 1961, rail freight continued as the traditional method in transporting frozen fishery products from the Northwest. A total of 209 carload shipments were made to Chicago from that region during the year. These were composed of frozen halibut, salmon, sablefish, and other species landed in the Pacific Northwest. Carloads from Arizona, consisting of Mexican west coast frozen shrimp, were up from the previous year--7 cars as against 5 cars in 1960. The bulk of the frozen shrimp shipped to Chicago through Arizona, however, was hauled by trucks. Five carloads of frozen fishery products, mostly groundfish fillets, were received from Nova Scotia in 1961 as against only one carload the year previous.

RECEIPTS BY MONTHS

Total monthly receipts at Chicago were at their peak in August when 8.5 million pounds were reported. The August receipts were outstanding for fresh-water fish--Canadian white-

fish, yellow pike, chubs, and buffalofish. Frozen salt-water fish receipts also were at a high level in August when ocean perch filets, halibut, and whiting were relatively heavy. Monthly receipts again were substantial in October when fresh-water fish arrivals were near the 3-million-pound mark, and shellfish products receipts in that month were the highest for the year. Receipts were lowest in April because of extremely light frozen salt-water fish deliveries, and generally light fresh-water fish and shellfish products arrivals.

LAKE TROUT

Fresh and frozen lake trout receipts (including filets) of 1.3 million pounds in 1961 did not decline to the same extent as the previous years. Fresh iced lake trout receipts were lower from all Lake Superior shipping points, and there was a drop in arrivals of the iced product from Canada's northwest lakes. The 1961 lake trout receipts from Canada of frozen dressed, drawn, and filets, however, were up 20 percent from the previous year. This offset to some extent the more marked 30-percent drop in receipts of iced lake trout.

Chicago's lake trout receipts were extremely light during the first half of 1961. The local wholesale market was practically bare of any variety of lake trout during that period, and the small supplies of Canada-produced fish that were available commanded fancy prices. Market supplies improved slightly in July when wholesale prices were still maintained at the higher level. Lake trout became more readily available in August-September when receipts were quite good for both iced fish and the frozen products. Wholesale prices for lake trout

Year	Lake Trout ^{1/}			Year	Whitefish ^{1/}		
	Total Receipts	Percentage of Arrivals from:			Total Receipts	Percentage of Arrivals from:	
	Quantity	U. S.	Canada		Quantity	U. S.	Canada
	1,000 Lbs.	%	%		1,000 Lbs.	%	%
1961	1,341	13	87	1961	7,064	12	88
1960	1,587	19	81	1960	8,065	11	89
1959	1,926	33	67	1959	8,246	14	86
1958	2,313	27	73	1958	8,900	14	86
1957	2,428	20	80	1957	8,069	14	86
1956	2,934	29	71	1956	7,712	23	77
1955	3,579	32	68	1955	8,820	21	79
1954	4,327	41	59	1954	9,710	29	71
1953	3,580	53	47	1953	9,014	37	63
1952	4,021	58	42	1952	10,179	35	65
1951	4,054	52	48	1951	9,774	29	71
10-year average 1952-61	2,804	-	-	10-year average 1952-61	8,578	-	-

^{1/}Includes fresh, frozen, fillets, etc.

^{1/}Includes fresh, frozen, filets, etc.

remained at the upper level during the greater part of the year with the average price for domestically-produced fish from Lake Superior higher than in 1960. The demand at Chicago for iced lake trout from Canada's northern lakes was exceptionally good in 1961. Wholesale market prices were highest during the first quarter of the year, and continued strong throughout the summer months. Prices for the Canadian product dropped briefly in September but did not decline to the extent as in the same month the previous year.

WHITEFISH

The 1961 receipts of fresh and frozen whitefish (including filets) at Chicago amounted to more than 7 million pounds. The year's receipts comprised about one-fifth the total 1961 fresh-water fish arrivals. Whitefish continued to rank as the principal fresh-water fish variety marketed at Chicago. Canada-produced fish from the northwest lakes accounted for 88 percent of Chicago's total whitefish receipts while domestic Great Lakes shippers supplied the remainder. The percentage of receipts of domestically-produced whitefish was up from the previous year as a result of very good Great Lakes catches which turned out to be the best since 1957. In the first 11 months of 1961, United States Great Lakes whitefish landings totaled more than one million pounds, 36 percent more than landings in the full year of 1960. Whitefish landings for the period increased substantially at all lakes except Lake Erie. The increase in whitefish landings at Lake Michigan was especially large--about 200 percent more than in 1960. The 1961 iced whitefish receipts from domestic shippers of the Upper Peninsula of that State increased 40 percent from the previous year. Receipts of that species from Minnesota suppliers, however, were only half of those in 1960 because of the curtailed fall season at Red Lake.

Whitefish arrivals at Chicago, while quite good at the start of 1961, were somewhat erratic during the first four months of the year. Winter fishing in Canada provided moderate

to good supplies until April-May when receipts were the lowest for the year. Receipts started to pick up in June when Canadian summer fishing operations got under way, and reached a high point in August-September when whitefish arrivals were the largest for the year.

Market conditions for Great Lakes whitefish were consistently strong during most of the year. Wholesale prices remained at the upper level but did not reach the Jewish Holiday high of 1960. The more abrupt price break for Great Lakes whitefish came in December 1961 when market prices were sharply reduced for a brief period. But prices again climbed to the higher level as the year closed. Prices for Canadian whitefish were somewhat lower than in 1960, but with wide variations which are not unique in the marketing and price structure of that product.

HALIBUT

Frozen halibut receipts at Chicago in 1961 continued to lead the salt-water fish group. The year's receipts of 6.4 million pounds (including fillets, steaks, and portions) declined from 1960 mainly because of the relative shortage of supplies from Northwest packers before the start of the 1961 Pacific halibut fishing season, and also because of the increasingly strong demand for fresh and frozen halibut in other parts of the country. Chicago's receipts during the year were lower for frozen dressed halibut from United States shippers, but increased substantially for Canada-produced fish shipped from British Columbia. Receipts of frozen halibut fillets and steaks were about the same as in 1960, but with some increase for frozen halibut portions which are now stocked by the majority of Chicago distributors.

Receipts of frozen halibut averaged one-half million pounds for each month during the first quarter of 1961, but dropped sharply in April (just before the new fishing season began in the North Pacific) when receipts were the lightest in several years. Inventories were then virtually depleted, and a number of Chicago distributors were completely out of supplies. New seasonal supplies accounted for greatly increased frozen halibut receipts in June when volume for that month climbed to nearly one million pounds. Monthly receipts were more evenly spread out during the last half of the year when they averaged better than one-half million pounds for each month. Market conditions for frozen halibut were steady to firm in 1961. Except for a brief decline in June, wholesale prices at Chicago advanced steadily until the year closed, averaging about 15 percent higher than in 1960.

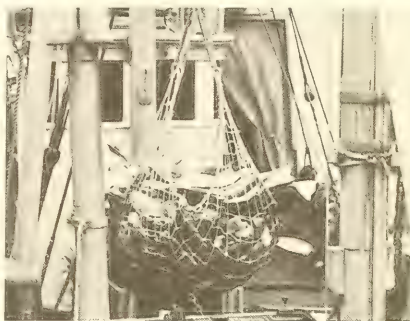


Fig. 4 - Unloading halibut with a cargo net from a fishing vessel docked at Seattle, Wash.

SHRIMP

The United States shrimp industry in 1961 was faced with a number of problems including very low landings, natural disasters, and diminishing inventories. A newer development was the purchase of United States frozen shrimp by foreign buyers. The 1961 frozen shrimp receipts at Chicago, however, were not greatly affected by these developments. The year's total receipts of all frozen shrimp amounted to more than 15 million pounds--only one-half percent less than in 1960. A 4-percent drop in receipts of the raw headless product in 1961 was offset by the same percentage increase in receipts of breaded and other processed shrimp (total receipts of those products were 6 million pounds). Receipts of raw headless shrimp from Texas were only 5 percent below the previous year but were down sharply from Louisiana shipping points. The gap was filled by a 35-percent increase in receipts of Mexican west coast shrimp shipped through Arizona and California ports of entry.

Frozen shrimp receipts at Chicago by months were generally heavy at the beginning of 1961 when they averaged about 1.5 million pounds for each month through March. The April receipts fell off sharply to the low point for the year. The flow of supplies into the Chicago

market was moderate during the summer months, but again slumped in September when the effects of hurricane Carla were felt. Gulf Coast shrimp landings were up briefly thereafter resulting in October receipts at Chicago of nearly 2 million pounds. Monthly receipts of breaded and other processed shrimp averaged well over one-half million pounds a month and jumped to nearly twice that amount in August.

Market conditions for frozen shrimp at Chicago were mostly steady during the first half of 1961. There were signs of some uncertainty because of heavy inventories carried through March, but the effects were not significant and price fluctuations were small. The shrimp supply and market situation commenced changing swiftly about July when warehouse stocks started their rapid decline, and wholesale prices advanced to very high levels the remainder of the year.



BLUEFIN TUNA SWIMS 4,500 MILES IN 119 DAYS

A bluefin tuna of about 400 pounds was tagged at Cat Cay, Fla., on June 10, 1961, and recaptured on October 6, 1961, by a commercial seiner off Bergen, Norway; a distance of about 4,500 miles along the steamer routes. This amazing feat indicates that the tuna swam at an average speed of almost 40 miles per day, provided the fish started out the moment it was released off Florida and was caught the moment it arrived off Norway, and also provided that the tuna was keeping on a compass course with which not even the toughest second mate could find fault!

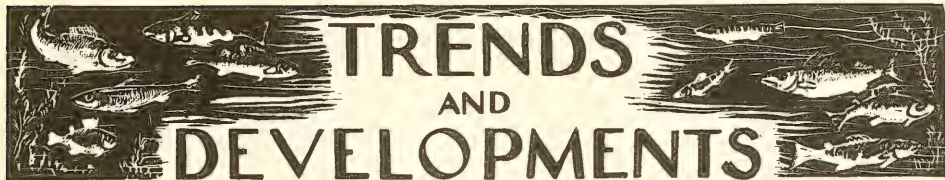
The bluefin tuna was tagged by the captain of the sportfisherman Caliban II. The captain together with his associate who is president of the International Game Fish Association) tagged 89 giant tuna in the cooperative game fish tagging program of the Woods Hole Oceanographic Institution.

A second tagged bluefin was recaptured off Bergen after 120 days of freedom. This fish was tagged on June 1, 1961, also off Cat Cay and was estimated then at 500 pounds. At recapture on September 28, 1961, the fish weighed 484 pounds.

The Ocean Research Institute at Bergen, Norway, which reported both recoveries, stated that this late season there were many giant tuna in lean condition in the catches. In other late seasons the commercial catches also are occasionally mixed with very big tuna in bad condition. The fishermen call these fish "long-tailed tuna." The Institute speculated that these fish must be lean after their Atlantic migration during the feeding period. This second recovery seems to indicate that the first fish was not an isolated straggler.

Of the 1,000 bluefin tuna that have been marked through the fall of 1961 less than 100 were in the "giant" class (over 300 lbs.). Of the others, two 18-pound fish marked off No Mans Land in 1954 and 1957 were recaptured in the Bay of Biscay by French commercial fishermen in 1959 and weighed then about 150 pounds. One small tuna tagged off Chatham, Mass., in August 1957, was recaptured off Gloucester in August 1959. Another one tagged 320 miles off Ocean City, Md., on May 24, 1959, was taken commercially off Provincetown, Mass., on August 20, of the same year. Of interest also is the fact that of the 6 bluefin tuna originally tagged by sportfishermen, 4 were caught by commercial fishermen.

The return of the large bluefin from Norway may indicate a migration during the summer, whereas the tuna migrations generally are believed to take place in the spring and fall. Together with the returns from the Bay of Biscay it also indicates more strongly that western and eastern Atlantic tuna indeed do mingle. (*Oceanus*, December 1961, Woods Hole Oceanographic Institution.)



TRENDS AND DEVELOPMENTS

Air Freight

FRESH PACIFIC SALMON SHIPPED TO NEW YORK CITY BY AIR FREIGHT:

Air-freight speed, a newly-developed container, and a gelatin refrigerant are now putting fresh Pacific salmon on the New York City market up to eight days faster than other methods of transportation. It also shows that an eastern market exists for "ocean-fresh" shipments—even at 10- to 15-percent higher prices. The cost of air freight was reported as about \$17 a hundredweight as compared to \$13-15 a hundredweight for rail express in less than carload lots, depending on the weight of the shipment.

The "flying fish" plan was developed by an executive of a Burbank, Calif., airline. He first solved the problem of a fish container by using a laminate with a rigid core of foamed polystyrene. Waterproof, light in weight, and self-insulated, the container is sized for palletization and also serves as a convenient sales unit. Although inexpensive enough to throw away, it is durable enough to survive a number of trips if desired.

To overcome the bulk and the melting problems of ice, the airline simply eliminated ice entirely. In its place, a gelatin material frozen in polyethylene bags to a temperature lower than ice, but not low enough to freeze the fish was used.

On Monday, May 14, 1962, the daily "Fishery Products Report" of the New York Market News Service of the U. S. Bureau of Commercial Fisheries showed the following wholesale prices for fresh red king salmon from California: for fish shipped by air express, large some \$1.10, medium some 95 cents, and small some 85 cents a pound; for fish shipped by rail express, large some \$1.05 and medium some 90 cents a pound.



Alabama

FISHERY LANDINGS, 1961:

The Alabama commercial catch of fish and shellfish in 1961 amounted to 8.5 million pounds valued at \$2 million ex-vessel. Compared with the previous year, this was a drop of 30 percent in quantity and 34 percent in value. The 1961 shrimp catch was the lowest since 1949. Shrimp (heads-on), red snapper, mullet, blue crabs, oysters, and groupers comprised 92 percent of the year's total catch.



Shrimp trawler docked at Bayou La Batre. Trawl net is hung up to dry to prevent deterioration.

A marked decrease in shrimp landings (down 3.6 million pounds) was primarily responsible for the 1961 over-all drop. Failure of the shrimp crop and heavy oyster mortality placed the fishing communities in a serious economic condition. Due to a shortage of landings of principal species, shore facilities operated at a minimum, drastically reducing the earnings of plant employees. By the end of the year Federal aid was sought to alleviate the situation.

Blue crab landings totaled 838,000 pounds--up 68 percent compared with 1960. Increased effort was expended in that fishery due to the scarcity of shrimp and oysters. The crab meat market was weak during most of the year with processing plants operating on a small margin of profit.

Oyster production (508,000 pounds of meats, valued at \$162,000) dropped 661,000 pounds and \$155,000 below 1960. This sharp decline was primarily attributed to heavy mortality due to an influx of fresh water from flooded upstate areas in February.

The catch of fresh-water and salt-water finfish amounted to nearly 3.6 million pounds valued at \$628,000 ex-vessel. This was a gain of nearly 10 percent in quantity compared with the previous year. Red snapper (1.8 million pounds) accounted for 50 percent of the total finfish landings and 75 percent of the finfish value. Mullet was next in volume, accounting for 25 percent of the catch. Incidental catches of croaker, king whiting, white sea trout, and spot by shrimp trawlers registered substantial gains compared with the previous year.



Alaska Fisheries Exploration and Gear Research

PROGRAM FOR EXPLORATORY BOTTOM FISHING, 1962:

Proposed plans for exploratory fishing for bottomfish and other marine fish and shellfish were announced in April 1962. Four different cruises will be made with a chartered vessel by the staff of the Juneau Exploratory Fishing and Gear Research Base of the U. S. Bureau of Commercial Fisheries. Explorations are expected to begin July 1 and continue until late November. The Bureau's Auke Bay Biological Research Laboratory will participate in the cruises. Scientists from the Alaska Department of Fish and Game are also expected to be aboard.

Two separate six-week cruises are proposed in waters between Prince William Sound and Kodiak Island during July, August, and September. Work anticipated during the fall season includes two cruises in Southeastern Alaska.

Although general catch information primarily of interest to the commercial fishing industry is the major goal of the summer explorations, king crab data will be the main objective of the first survey, and shrimp data of the second survey.

The fall cruises suggested are preliminary to surveys that may later determine available quantities of commercial species. The third cruise of the year is planned as a trawl inventory of fish, the fourth as a survey to find where and how to catch commercial quantities of octopus, a halibut bait imported from Japan and now in diminishing supply.

This will be the third year of operation for the Bureau's Alaska Exploratory Fishing and Gear Research Base. In 1960, a single 35-day cruise with the Astoria, Oreg., trawler *New Hope* was made west of Craig, Alaska. In 1961 two cruises with the chartered trawler *Tordenskjold*, lasting four months, resulted in surveys of waters from Cape Spencer to Cape St. Elias and in Lower Cook Inlet.



Alaska Fisheries Investigations

SALMON FRY MIGRATIONS:

In Auke Creek near the Biological Research Laboratory of the U. S. Bureau of Commercial Fisheries, the pink salmon fry migration was nearing its peak in April 1962, and red and coho salmon fry migration had begun by the end of April. Fry migrations of all species were later this year than in 1961.

At Little Port Walter, sampling was completed of pre-emergent fry from the spawning areas. Over 6 million pink salmon fry survived the adult run of 30,000 fish last fall, representing an excellent winter survival. The largest fry migration in the 22-year history of the station was expected. Ten percent of the predicted migration had been counted by April 24, with about 160,000 fry migrating that night. Herring moved into the estuary and were feeding on pink salmon fry. It appears that predation by herring may be a major factor in the survival of Little Port Walter pink salmon.

In early April, Karluk Lake had an ice covering of only 13 inches and all tributaries entering the lake were free of ice. The fry



Enumerating pink salmon fry on their outmigration at Sashin Creek, Little Port Walter, in Southeastern Alaska.

counting stations at Grassy Point and Meadow Creek were set up on April 5 and April 7, respectively. Average nightly catches for the first five nights of fry trapping were 137 fry at Grassy Point and 153 at Meadow Creek. Results of staining and recovery tests indicated that the traps were taking from 14 to 23 percent of the migration. The fry migration at Grassy Point was earlier and of a greater magnitude this year than in 1961, probably due to warmer weather.

A pink salmon, tagged June 19, 1961, near Unimak Island of the Aleutian Chain by biologists of the Auke Bay Laboratory, was recaptured near Pakacha River in East Kamchatka, U.S.S.R., on August 8, 1961.

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WESTERN ALASKA KING CRAB CATCH, FIRST QUARTER 1962:

The Alaska Department of Fish and Game reported that the king crab catch for Western Alaska (Peninsula, Chignik, and Aleutians) totaled 5,562,000 pounds for the first three months of 1962, compared with 3,697,000 pounds for the same period in 1961. This



Fig. 1 - Kodiak king crab haul, showing large average size of king crab.

was an increase of nearly 2 million pounds for the 1962 period. All of this increase was in the Aleutian area where 4,885,000 pounds were taken. Last year the catch for that area for January-March was 1,993,000 pounds.

Fishing effort in the vicinity of Adak has increased threefold over the 1961 season as vessels from the Peninsula-Chignik area moved out to take advantage of the excellent fishing. This change in fishing effort has been reflected in the decline in landings for the Peninsula-Chignik area. Last year the total for that area through March was 1,704,000 pounds; this year it was 677,000 pounds.

King crab were still available in the Peninsula-Chignik area in commercial quantities, but severe weather conditions and lack of effort are believed responsible for the lower catches. As of early April 1962, the Aleutian Islands fishery was not operating due to the soft-shell condition of the crabs. Fishing was expected to pick up again in July at Kachemak Bay. The fishery picked up due to improving weather conditions, but the molting season of the crabs began in April



Fig. 2 - Method of tagging king crab for research purposes.

and this was expected to cause a temporary slump in the fishery there also.

* * * * *

HERRING FISHERY:

The herring arrived at Indian Point, near Juneau, Alaska, assuring a good supply for halibut bait and for local sport fishing. In addition, herring caught near the Sitka area were landed in Juneau. By State law, only one herring reduction plant (at Washington Bay) will be permitted to operate this year.



California

PELAGIC FISH POPULATION SURVEY CONTINUED:

M/V "Alaska" Cruise 62-A-1-Pelagic Fish: The Gulf of California from Mazatlan north to George's Bay on the mainland side; San Felipe south to Cape San Lucas on the Baja California side; and the Pacific coast of Baja California from Cresciente Island to Cedros Island were surveyed (February 19-March 29, 1962) by the California Department of Fish and Game research vessel Alaska. The objectives were (1) to obtain sardine samples from the Gulf of California for blood genetics and morphometric studies in order to distinguish the relationships of Gulf sardines to those on the Pacific Coast; (2) to sample Pacific mackerel and jack mackerel for age studies; and (3) to collect miscellaneous species and data requested by other investigations.

GULF OF CALIFORNIA: Sardines were collected throughout most of the Gulf. They ranged from newly-hatched larvae to large adults exceeding 200 mm. Nine samples of adults and juveniles and 10 samples of post-larval fish were netted. Sardine larvae were unusually abundant: of 29 samples containing clupeoid larvae most were tentatively identified as sardines. Sardines were attracted to the ship at night with a 1,500-watt light and then captured with the blanket net. Larvae were collected with a dip net.

U. S. Bureau of Commercial Fisheries personnel conducted serological tests on six samples of fish ranging from 85 to 200 mm. standard length. Those tests established that Gulf sardines constitute the third known, distinct, non-interbreeding, subpopulation. The other two subpopulations, designated as "northern" and "southern," occur off California and Baja California, Mexico.

The "Gulf" subpopulation was distinguished by the frequency with which a particular blood type (C+) showed up in standard tube agglutination tests. The C+ phenotype mean frequency was 18.0 percent for Gulf fish compared to 5.9 percent for the adjacent "southern" stock and 13.9 percent for "northern" sardines.

Information was obtained on sardine sizes and distribution in the Gulf. The relatively numerous samples collected over such a widespread area indicates a larger and more widely-distributed population than inferred from previous data.

Pacific mackerel, collected on seven stations, were all preserved for study ashore. No jack mackerel were captured or observed. Small samples of several anchovy species were collected in the southern Gulf.

An 8-ft. beam trawl was fished when time and bottom topography permitted. Depths of 10 to 50 fathoms yielded a variety of fish and invertebrates which were preserved for study ashore. A 25-fathom long beach seine was used for selected shoreline collections.

Three sets with deep-water traps were unsuccessful. One trap failed to return to the surface; one, an apparent delayed return, was subsequently recovered by Mexican citizens; and no catch was made with the third.

Annotated fathograms were made over sparsely sounded areas of the Gulf using a 0 to 6,000 fathom range EDO depthfinder. All data were delivered to the U. S. Navy Hydrographic Office, Wilmington, Calif.

Approximately 1,300 feet of 16 mm. color movies and numerous still photographs were taken of cruise activities.

Sea surface temperatures ranged from 70° F. (21.1° C.) at Palmas Bay to 57.2° F. (14.0° C.) at Point San Fermin with most below 64° F. (18.05° C.). Good weather prevailed in the Gulf during most of the cruise.

PACIFIC COAST OF BAJA CALIFORNIA: Special effort was made to delineate the geographical boundary between the "Gulf" and the "southern" subpopulations of sardines. Adverse weather prevented work in the area between Cape San Lucas and Cresciento Island. Sardines were collected on 3 of the 17 night-light stations north of there, however. One sample netted off Cresciento Island was blood-typed and found typical of the "southern" subpopulation.

A special albacore trolling track was made near Guadalupe Island. Although sea-surface temperatures were favorable ranging between 60.8° F. (16° C.) and 66.2° F. (19° C.), no fish were caught.

Two exploratory beam trawl tows for hake were made off northern Baja California without results.

Airplane Spotting Flight 62-2-Pelagic Fish: The area from the United States-Mexican Border to Point Piedras Blancas, Calif., was surveyed from the air (February 21-22, 1962) by the Department's Cessna "182" 9042T to determine the distribution and abundance of pelagic fish schools. Good weather prevailed throughout the area.

Between Long Beach and Point Piedras, Calif., 319 anchovy schools were counted: 253 off Cambria Pines, 56 in Estero Bay, and 10 south of Pt. Mugu.

Between Long Beach and the United States-Mexican Border, 5 sardine schools were observed between Newport and Oceanside. A few deep, small, unidentified spots were seen between Del Mar and Oceanside and some dim spots off La Jolla Pt. were probably jack mackerel or Pacific mackerel.

About 50 basking sharks, average length estimated at about 20 feet, were observed one mile off La Jolla Pt. There were four skin divers among them. Two of the divers were swimming up to the sharks or intercepting them and grabbing their dorsal fins. A grabbed shark would give the diver a brief ride before shaking him off. The other two divers seemed to be photographing the sharks.

Airplane Spotting Flight 62-3-Pelagic Fish: The survey to determine the distribution and abundance of inshore pelagic fish schools was continued (March 19-22, 1962) by the Department's Cessna "182" 9042T from Santa Cruz, Calif., to the United States-Mexican Border. Scouting conditions were only fair because of partial cloudiness.

Seven schools of what were probably Pacific mackerel were seen off Santa Monica and 15 anchovy schools were off Port Hueneme. Thirty-one gray whales were counted heading north.

Between Santa Monica and the United States-Mexican border, 35 anchovy schools were seen, all off Santa Monica. Thirteen gray whales were observed going north.

No fish schools were sighted from Pt. Sal to Santa Cruz, but an 8-ft. shark was just outside the surf at Oceano. The return trip was over Santa Monica at 7,000 feet. From that height, the anchovy schools in the bay were plainly visible. Some 50 anchovy schools, 7 Pacific mackerel schools, 56 gray whales and 1 shark were sighted.

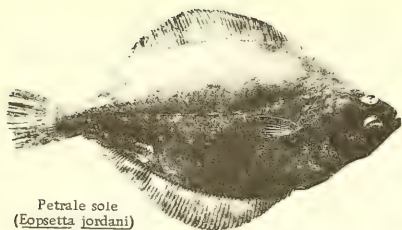
Note: See Commercial Fisheries Review, May 1962 p. 14.

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DOVER AND PETRALE SOLE TAGGING STUDIES:

M/V "N. B. Scofield" Cruise 62-S-3-Trawl: The coastal waters between Eureka, Calif., and Mack Arch, Oreg., were surveyed (April 4-May 3, 1962) by the California Department of Fish and Game research vessel N. B. Scofield to tag Dover and petrale soles (*Microstomus pacificus* and *Eopsetta jordani*), and to collect and preserve incidental specimens for other investigations. A 400-mesh Eastern-type otter trawl of 4½-inch mesh was used throughout the trip.

A total of 2,396 Dover sole were tagged and released in 45 to 136 fathoms. Over 90 percent were trawled in 70-125 fathoms.



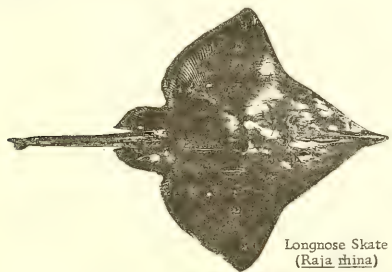
Petrale sole
(*Eopsetta jordani*)

Some 441 petrale sole were tagged and released in 41 to 124 fathoms. Over 75 percent had been taken in 50-74 fathoms. Tags used were the vinyl spaghetti-type. The tagging was a joint operation with the Oregon Fish Commission.

Primary objective of the program, which was coordinated by the Pacific Marine Fisheries Commission, is to obtain information on movements of the fish. This is part of a coastwide plan to determine if separate stocks of Dover and petrale sole exist along the Pacific coast, as a background to management programs for those fish which account for more than \$1 million annually to the commercial fishing industry.

Since it is essential that the fish tags find their way back to the biologists for this program to be successful, a one dollar reward will be paid for each of the tags returned to the Department of Fish and Game.

Several tags from both species were recovered by commercial vessels before the cruise was completed. Information obtained from these and other returns will add to the knowledge of population structure and seasonal distribution.



Longnose Skate
(*Raja rhina*)

Deep-water skates (*Raja* sp.) were collected for Scripps Institution of Oceanography

and invertebrates were saved for the Allan Hancock Foundation.

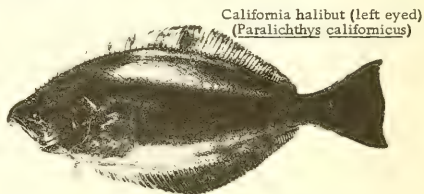
Live invertebrates and fish were delivered to Marineland of the Pacific, San Pedro, and the Shipwreck Aquarium, Eureka.

Note: See Commercial Fisheries Review, March 1961 p. 21.

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HALIBUT AGE-WEIGHT-LENGTH RELATIONSHIPS STUDIED:

M/V "N. B. Scofield" Cruise 62-S-2-California Halibut: The California Department of Fish and Game research vessel N. B. Scofield cruised (February 26-March 22, 1962) off the mainland coast of California from Seal Beach (Los Angeles County) to Naples (Santa Barbara County)--principally off Ventura in 11 to 15 fathoms. Objectives of the cruise were (1) to secure a sample of California halibut stratified by sex and length for determining age-weight-length relationships; (2) to determine the temperature profile on the trawling grounds; and (3) to secure a collection and/or a record of the fish, molluscs, and crustaceans found in association with halibut.



California halibut (left eyed)
(*Paralichthys californicus*)

A very satisfactory sample of California halibut was secured by trawling. The nets were an Eastern-type not specifically adapted for halibut. An estimated 1,000 halibut were caught. The otoliths and one of the pre-operative bones were removed from about 500 of the fish.

Male halibut predominated in the catch of fish up to 20 inches. Males and females were in equal numbers between 20 and 22½ inches, but females outnumbered males in the larger sizes: as much as 21 to 1 for fish longer than 35 inches.

Temperature profiles taken with a bathythermograph at the beginning of each trawl showed that readings were about the same from top to bottom. Evidence of a thermocline was almost nonexistent.

Day-to-day temperatures varied about 2°, ranging between 51° and 53° F.

Trawls varied from 1 to 3 hours duration. Fish found in association with halibut were saved for Laboratory examination.

MIDWATER TRAWLING FOR SALMON FINGERLINGS CONTINUED:

M/V "Nautilus" Cruise 62N1g and 62N1h Salmon: The midwater trawl operations of the California Department of Fish and Game research vessel Nautilus were continued (April 1-5, 15-19, 1962) in the Carquinez Strait to capture marked salmon fingerlings on their seaward migration. A nylon midwater trawl with 25-foot square opening was used.

Trawling in Carquinez Strait was conducted between 8 a.m. and 3 p.m. and each tow was for 20 minutes. All tows were alternated between upstream and downstream, and between the north shore, center, and south shore of the channel.

A total of 114 tows was completed in the Strait during the cruise yielding a total catch of 257 king salmon (*Oncorhynchus tshawytscha*). Forty-nine of the salmon were marked recoveries previously released in San Pablo Bay and at Rio Vista, Coleman Hatchery into Battle Creek, and Nimbus Hatchery into the American River.

Other species appearing in the catch consisted mostly of Pacific herring (*Clupea palasi*)--54,980 fish, northern anchovy (*Engraulis mordax*)--7,849 fish, Sacramento smelt (*Spirinchus thaleichthys*)--2,167 fish, striped bass (*Roccus saxatilis*)--1,492 fish, American shad (*Alosa sapidissima*)--934 fish, king salmon (*Oncorhynchus tshawytscha*)--257 fish, mudsucker (*Gillichthys mirabilis*)--189 fish, staghorn sculpin (*Leptocottus armatus*)--137 fish, jacksmelt (*Atherinopsis californiensis*)--100 fish, split-tail (*Pogonichthys macrolepidotus*)--79 fish, pipefish (*Syngnathus griseo-lineatus*)--61 fish, and surfsmelt (*Hypomesus pretiosus*)--45 fish.

Note: See Commercial Fisheries Review, June 1962 p. 7.



Central Pacific Fisheries Investigations

STUDY OF OCEAN CURRENTS IN CENTRAL PACIFIC:

A study of ocean currents in the central Pacific Ocean by means of drift bottles was started in January 1961 by the U. S. Bureau of Commercial Fisheries Biological Laboratory in Honolulu. This long-term study was designed to provide information on the changes which take place in the currents with season, and from year to year. Such information is vital to an understanding of conditions in the ocean itself, and of the effects of ocean currents on the abundance and distribution of important commercial fish species and the organisms which provide their supply of food.



During 1961 the Laboratory's research vessel, the Charles H. Gilbert, released about 8,000 drift bottles in five cruises. As of April 1962 about 5 percent of those bottles have been found, most of them on islands of the Hawaiian chain. This rate of returns is similar to that obtained in drift bottle studies in coastal areas of the United States and is surprisingly high considering the size of the inhabited coastline of the Islands in relation to that of the three million square mile area in which most of the bottles were released. The pattern of drift bottle returns shows interesting changes in the current patterns near the Hawaiian Islands at different times of the year. During the winter months, most of the bottles which came ashore were those released to the south and west of the Islands. Very few of the bottles dropped to the east and north of the Islands were recovered. In spring the bottles were carried somewhat to the west, but the major movement was still toward the north. Later in the year, the pattern of recoveries showed a pronounced westerly movement, with few recoveries from the south.

Although most of the recovered bottles traveled relatively short distances, in a large number of cases the bottles had been carried for distances of over a hundred miles, at speeds of about 10 miles per day or more. The record for distance, in the returns from the Hawaiian Islands, was 540 miles traveled between a release point south of French Frigate Shoals and the recovery at Lisianski Islands, in the leeward group of the Hawaiian chain; the bottle was recovered 58 days after release, and was carried at a minimum speed of 9 miles per day. The longest distance traveled by any of the drift bottles released by the Honolulu Laboratory was about 1,800 miles, from the release point near the Equator at the international date line, to New Ireland in the Bismarck Archipelago; this bottle traveled at a speed in excess of 27 miles per day over this distance.

An interesting and significant observation is the fact that, in many cases, several bottles from a single release have traveled considerable distances to wash ashore close together at about the same time. For example, 11 out of 40 bottles from one release in the western Pacific late in 1961 were found on Maiana Island, in the Gilberts, after traveling almost 300 miles. This implies that there is surprisingly little dispersion in the open ocean due to turbulent mixing, or that there is a mechanism, such as convergence of the surface waters, which tends to keep the drift bottles together as they move with the currents. In either case these findings are of interest to the physical oceanographer, but features such as large-scale surface convergences are of interest to the biologist and the fisherman as well, since they provide a possible mechanism for the concentration of plankton and forage organisms which tend to attract commercially-important fish species.

In the near future, the results obtained from drift bottles will be augmented by the use of drift cards released near the Hawaiian Islands from aircraft. Test releases of drift bottles from an airplane showed that more than 20 percent of the bottles break when hitting the water. As a result, releases from aircraft will consist of cards, similar to those now used inside bottles, but enclosed in plastic envelopes weighted along one edge, so that the cards will float in a vertical position and not be unduly influenced by the winds. Results for aircraft releases of drift cards near the Hawaiian Islands at intervals of about one month and the Charles H. Gilbert releases

of drift bottles at greater distances should add greatly to the meager knowledge of the surface currents in the central North Pacific.



Conservation

OCEAN FOOD RESOURCES MENTIONED BY PRESIDENT KENNEDY IN ADDRESS TO WHITE HOUSE CONFERENCE ON CONSERVATION:

The value of ocean food resources was mentioned in the address of President Kennedy to the White House Conference on Conservation on May 25, 1962, at Washington, D. C.

In part, the President said: "...In addition, we can make the most extraordinary gains in getting food from the ocean depths in the next 10 or 20 years. This question of oceanography has also occupied the attention of the Congress and this Administration, how we can double the amount of protein which is available to people around the world. This is a whole new area of conservation, unknown to those who preceded us but which is now coming into public understanding, as a result of your efforts and the efforts of others, and which can make the most profound difference to the lives of people who live rather listlessly because of inadequate proteins.

"So harnessing science to conservation is going to be the great contribution of our day. . . ."

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FISHERY FIRM RECEIVES ONE OF SEVEN INTERIOR DEPARTMENT 1962 CONSERVATION SERVICE AWARDS:

Among the seven recipients of the 1962 Conservation Service Awards of the U. S. Department of the Interior was the Smith Research and Development Corporation Lewes Del., a subsidiary of a large menhaden fishery firm on the East Coast. In addition to that firm, a former United States Senator, a former governor, a citizen member of the Outdoor Recreation Resources Review Commission (ORRRC), two other leading conservationists, and one other private corporation were presented awards on May 25, 1962, in the Department's auditorium in Washington, D. C., by Interior Department Secretary Stewart L. Udall. The awards are made annually to private citizens and organizations for outstanding achievement in furthering the objectives of natural resource conservation programs.

Secretary Udall told Otis Smith, President of the Smith Research and Development Corporation, that his company "has rendered distinguished service in the cause of conservation. For a number of years, the Corporation has

striven to preserve the inshore environment which is essential to preserve some of the most valuable of our Atlantic fish and wildlife species. In 1961, you made available to the Department your scientific research vessel, the Cape May, and assumed all maintenance and operating cost, making possible the first systematic hydrographic survey of the continental shelf along the coast of New Jersey."

Also honored for impressive contributions in the field of conservation were: Honorable Joseph C. O'Mahoney of Wyoming, who served in the Senate for 25 years; Honorable Percival P. Baxter, former governor of Maine; Joseph W. Penfold, ORRRC member and conservation director of the Izaak Walton League; Don G. Fredericksen, Gooding, Idaho; M. D. Bryant, San Angelo, Texas; and the Phillips Petroleum Company, Bartlesville, Oklahoma.

Secretary Udall also presented a special plaque to Laurance S. Rockefeller, chairman of the Outdoor Recreation Resources Review Commission, for his continuing outstanding contributions to conservation. Rockefeller received the Department's Conservation Service Award in 1956.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-APRIL 1962:

Fresh and Frozen: For the use of the Armed Forces under the Department of Defense, more fresh and frozen fishery products was purchased in April 1962 by the Military Subsistence Supply Agency than in the previous month--the quantity purchased was up by 18.1 percent but the value of the purchases was up only 3.4 percent. This shows that lower-priced products were bought in April than in March because the value did not increase in the same proportion as the quantity. Compared with the same month a year earlier, April 1962 purchases were up 20.9 percent in quantity and 13.5 percent in value.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, April 1962 with Comparisons

QUANTITY				VALUE			
April	Jan.	Jan.-Apr.		April	Jan.	Jan.-Apr.	
1962	1961	1962	1961	1962	1961	1962	1961
2,300	1,902	7,088	7,069	1,121	988	3,995	13,535
..... (1,000 Lbs.) .....				..... (\$1,000)			

During the first 4 months of 1962, purchases were up only 0.3 percent in quantity but 13.0 percent in value as compared with the same period in 1961. Evidently the greater increase in value is due to higher prices and the purchase of more higher-priced products.

Prices paid for fresh and frozen fishery products by the Department of Defense in

April 1962 averaged 48.7 cents a pound, about 6.9 cents less than the 55.6 cents paid in March 1962 and 3.2 cents less than the 51.9 cents a pound paid in the same month of 1961.

Table 2 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, April 1962 with Comparisons

Product	QUANTITY				VALUE			
	April		Jan.-Apr.		April		Jan.-Apr.	
	1962	1961	1962	1961	1962	1961	1962	1961
Tuna	...	...	(1,000 Lbs.)	...	...	...	(\$1,000)	...
Salmon	563	1,297	3,676	2,662	301	572	2,040	1,175
Sardine	-	2	1,015	2	-	2	638	2
	1	21	11	81	1/	10	7	39

1/ Less than \$1,000.

Canned: Tuna was the principal canned fishery product purchased for the use of the Armed Forces during April this year. In the first 4 months of 1962, purchases of canned tuna and salmon were substantially greater than in the same period of 1961. But purchases of canned sardines were down because of the short packs of both Maine and California sardines during 1961. Purchases of the three principal canned fishery products (tuna, salmon, and sardines) in the first 4 months of 1962 were up 71.3 percent in quantity and 120.7 percent in value as compared to the same period in 1961. The higher value this year is accounted for by the purchase of more canned salmon.

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.



Florida

FISHERIES RESEARCH, JANUARY-MARCH 1962:

Research on fisheries with funds provided by various sources is being carried on by the Marine Laboratory of the University of Miami. The research of interest to commercial fisheries which was reported in the Laboratory's March 1962 Salt Water Fisheries Newsletter follows:

Larval Shrimp: The spawning habits of the Tortugas pink shrimp are being studied under a contract with the U. S. Bureau of Commercial Fisheries. Landings of Tortugas shrimp were over 10 million pounds in 1961 and were valued at nearly \$5 million ex-vessel. This fishery, thus, provides the basic natural resource for an important

segment of the economy in fishing towns from Key West to Fort Myers.

Few shrimp larvae were spawned during the first three months of 1962. However, this corresponds with the usual low in spawning during the winter months.

The numbers of larvae reached a seasonal low in November. In December and January numbers of larvae were also low, but were slightly increased over November as a result of the presence of larvae at certain in-shore stations. Bottom water temperatures declined to a low of 68° - 72° F. in January. Numbers of larvae and also water temperatures increased in February and March. By April, large numbers of postlarvae had survived their first 3 weeks of life and were entering the nursery areas along the coasts of South Florida. Over 1,300 were collected there in a single 30-minute haul with a plankton net.

The growth rates of pink shrimp held in aquaria for 8 months have been slow during the recent winter period. These shrimp were captured when they were only $\frac{1}{4}$ inch in length; they grew to over 3 inches in length by April 1962. In recent months they molted about every 3 weeks. The body of a shrimp is covered by a hard outer skeleton which must be shed periodically so that growth can take place.

Ecology of Florida Bay: The prolonged drought in south Florida has had a marked effect on the salt content of the normally brackish-water bays, ponds, and creeks of southern Everglades Park. Marine conditions as of April extended far up the channels of the Shark, North, Watson, Roberts and East rivers. Salt kills of fresh-water bass and sunfish were reported in the upper reaches of the Shark River channel. The increase in salt content permitted re-entry of larvae of many species of marine fish and invertebrates into the Coot Bay-Whitewater Bay areas that had largely disappeared during the heavy rainfall period 1958-1960. Large numbers of juvenile shrimp, eels, anchovies, and spotted sea trout were collected in the plankton nets during the first three months of 1962.

Early in March, abnormally high tides brought about by a severe storm forced salt water far into the fresh-water zone, with appreciable salt recorded at Mahogany Hammock, Pautotis Pond, and Nine-mile Bend.

The salt intrusion due to the high tides crossed a belt of land approximately 15 miles in width all across the southern border of the Park. At Pautotis Pond large numbers of Carolina marsh clams, averaging about 1.5 inches in diameter, were killed by salt water approximately half the strength of sea water. Normally the water in Pautotis Pond is fresh. It may be expected that the drought will increase in severity through May, and with higher temperatures of spring increasing the evaporation rate, salt content of Florida Bay waters will increase. In past drought periods the salt content of Florida Bay off Flamingo has risen to double the strength of sea water. At that level, many animals are forced to move offshore to the normal salinity of the Gulf of Mexico.

Spotted Sea Trout: It is bad enough (from the point of view of the fish) that some fish are tagged once by biologists to study their behavior, but one sea trout was tagged twice. During 1960 a biologist from the Marine Laboratory tagged a sea trout near Fort Myers with an internal plastic tag. About a year later the same fish was caught again by a commercial fisherman hired to catch fish for tagging. Because the internal tag can not be found unless the fish are gutted, another cut was made in the body wall and the trout was tagged and released once more. A commercial fisherman caught the unfortunate fish for the third time about a year after the second tagging. He turned in the two tags and collected a double reward for the single fish. The trout had been recaptured only a few miles from where it had been tagged in the beginning.

Fish Behavior Studies: The National Science Foundation has awarded a grant of \$200,000 to the Institute of Marine Science for construction of a new fish behavior laboratory. This facility will enable scientists to study marine animals under conditions in which the various environmental factors can be controlled. It is expected that the facility will attract many visiting scientists from this and other countries since it will be the only laboratory of its kind in the country.

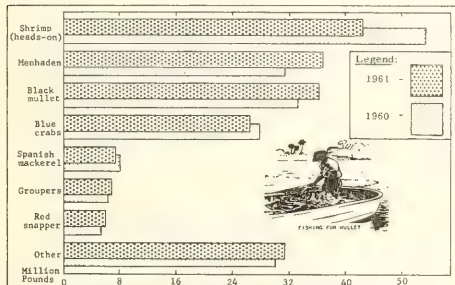
Precooked Frozen Shrimp Coated with Starch Gel: Work is continuing to determine quality changes of precooked frozen shrimp coated with a starch gel. Sensory tests and bacteriological analyses were performed after one month of frozen storage at -20° C. (-4° F.). Results of bacterial analyses revealed no bacterial growth since initial preparation.

Effect of Freezing on Fish: Enzyme analyses for active amylase are being performed to determine the effect of freezing on fish. After one month of storage there appears to be no destruction of the amylase. Active hydrolysis was observed after incubating the samples at 37° C. (98.6° F.) for 24 hours, whereas at 25° C. (77° F.) for the same period of time negative hydrolysis was observed. Tests will be made following each month of storage.

Note: See Commercial Fisheries Review, May 1962 p. 17.

FISHERY LANDINGS, 1961:

Fish and shellfish landings at Florida ports during 1961 amounted to 190.2 million pounds with a value of \$25.7 million ex-vessel. Compared with 1960, this was a slight drop in both quantity and value.



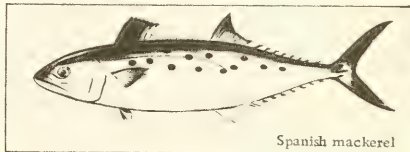
Florida's catch of certain fish and shellfish, 1961 and 1960.

The shrimp fishery experienced a poor season compared with 1960. A total of 42.1 million pounds of shrimp (heads-on) was landed at Florida ports during 1961--a decline of 9.2 million pounds from the previous year, and a drop in value of \$800,000. The average ex-vessel price in 1961 rose to slightly over 32 cents per pound (heads-on), or about 54 cents per pound (heads-off). Despite the reduced landings in 1961, shrimp was still caught in greater quantities and brought higher value ex-vessel than any other species of fish or shellfish.

Oysters were taken in record quantities (3.3 million pounds of meats) with a value of nearly \$1.5 million--a gain of 1.3 million pounds and \$557,000 above 1960. Demand and prices were good most of the year. Several new oyster firms began planting and cultivating oysters on both Florida's east and west coasts.

A good catch of menhaden occurred in 1961--36.3 million pounds. This was an increase of 5.1 million pounds above the previous year. There was a strong demand and good prices for fish meal and solubles.

Although blue crab production was down 1 million pounds compared with 1960, there were still 24.6 million pounds landed. This was the second highest blue crab production year in Florida's history--exceeded only by 1960. The reduced production was the result of more than usual cold or unfishable weather in the winter months.



Spanish mackerel

Black mullet ranked third in landings during 1961 with 35.6 million pounds--2.7 million pounds below last year. Spanish mackerel (7.1 million pounds) dropped over 571,000 pounds below 1960, while the catch of groupers (6.6 million pounds) was up 452,000 pounds.



Fur Seals

PRICES FOR ALASKA SEAL SKINS SET NEW RECORD AT SPRING AUCTION:

The spring 1962 auction sale of U. S. Government and other foreign-produced fur seal skins was held at St. Louis, Mo., on April 12-13, 1962. The attendance at the sale by fur dealers, brokers, and manufacturers was the best in many years; some 71 were present, including participants from Canada, Denmark, Great Britain, and Italy. The prices received for conventionally-processed Alaska seal skins established a new record--a grand average for all sizes and grades of \$106.80. A new high was also established for Lakoda processed seal skins (natural sheared)--an average price of \$44.33 was received for all sizes and grades.

Sales for the United States-owned seal skins totaled \$2,027,346. The average price for 16,996 conventionally-processed seal skins sold for the account of the United States

was \$106.42, an advance of 27.7 percent over the fall sale in 1961. Average prices received for the various types of skins were: Black, \$108.00 (up 21 percent); Kitovi, \$101.23 (up 26.3 percent); and Matara, \$107.42 (up 37.4 percent). The average price of \$44.33 received for 4,664 Lakoda or sheared female skins represents an advance of 11 percent over the price received in the fall of 1961. A small number of low-quality sheared female skins withheld from earlier auctions were disposed of at this sale for an average price of \$13.57 per skin.

The fall auction of seal skins has tentatively been scheduled for October 25-26, 1962.

Note: See Commercial Fisheries Review, December 1961 p. 29.

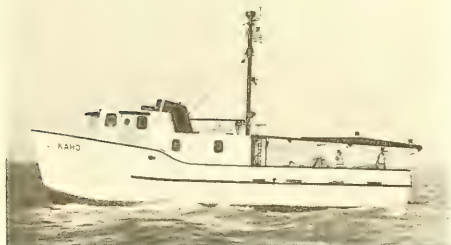


Great Lakes Fisheries

Exploration and Gear Research

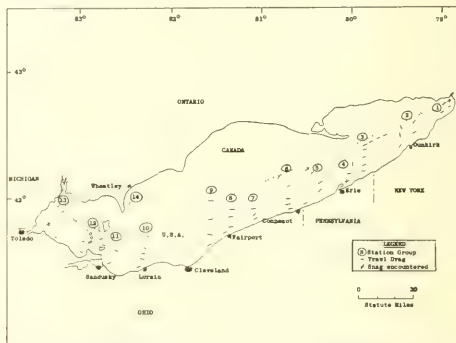
SEASONAL DISTRIBUTION STUDIES OF COMMERCIAL FISH STOCKS IN LAKE ERIE CONTINUED:

M/V "Kaho" Cruise 2: Four weeks of exploratory trawl fishing in Lake Erie were completed on May 20 by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Kaho. The objectives of the cruise were to continue studies of the bathymetric and seasonal distribution of various fish stocks and their availability to standard-type bottom trawls.



Recent addition to the Bureau's Great Lakes research fleet is the exploratory fishing and gear research vessel Kaho.

A total of 63 drags was completed (20 in the eastern basin, 27 in the central basin, and 16 in the western basin) at depths ranging from 3 to 32 fathoms. No commercially-significant quantities of smelt were taken, nor were other species taken in commercial quantity except for several moderate catches of yellow perch in the western basin. The normal seasonal inshore movement for spawning probably accounted for the general lack of fish concentrations in trawlable areas.



M/V Kaho Cruise 2, Lake Erie explorations.

The eastern basin was found to be nearly devoid of fish in trawlable areas except for a several-mile-long heavy midwater concentration recorded on the echo-sounder in the deepest area of Lake Erie near the junction of the international and New York-Pennsylvania boundaries. Gill nets set over much of the 5- to 10-fathom depth range in the eastern basin precluded sampling in otherwise trawlable areas. Bottom conditions in waters shallower than 7 fathoms were generally unsuitable for trawl fishing.

In the central basin, smelt catches of 130 pounds per hour were taken off Fairport, Ohio, at a depth of 13 fathoms; and 150 pounds at 7½ fathoms off Lorain, Ohio. Shallow areas in the central basin were also generally not suited for trawling because of rough bottom conditions or the presence of gill nets and trap nets.

The western basin yielded significant catches of yellow perch: 220 pounds per hour at 7-fathom depths east of Kelleys Island; 410-480 pounds per hour at 5½ to 8 fathoms east of South Bass Island; 130-140

pounds per hour at 5 fathoms west of Middle Bass Island; and 160-380 pounds per hour at depths of $3\frac{1}{2}$ to 5 fathoms west of the Middle and West Sister Islands.

Stomachs of 363 smelt from 10 areas were examined for content and eggs were present in 2 specimens. Most of the yellow perch taken in the western basin had completed spawning while perch from the other basins had not. Nearly all perch caught ranged in size from 7.5 to 8.5 inches and averaged 8.0 inches.

Surface temperatures ranged from 37.8° F. in the eastern basin to 76.5° F. in the western basin. Bathythermograph profiles revealed the water temperature to be homothermous in all areas visited except in the island area where a double thermocline existed.

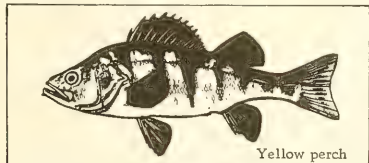
Note: See Commercial Fisheries Review, March 1961 p. 26.



Great Lakes Fishery Investigations

LAKE ERIE FISH POPULATION SURVEY:

M/V "Musky II" (April 1962): Operations of the U. S. Bureau of Commercial Fisheries research vessel Musky II began in early April with visits to limnological and fishery stations at Sandusky Bay, Sand Point, East Harbor, Cedar Point, and east of Kelleys Island. Overnight sets of 300-foot lengths of experimental gill nets ($3\frac{1}{2}$ - to 5-inch mesh) were made at the latter two locations. Many sheepshead, and a few yellow perch, yellow pike (walleyes), carp, and white suckers were taken. Catches in two drags of a bottom trawl made at each of those stations averaged about 632 fish per tow in the open lake and 357 in Sandusky Bay. Principal species were yellow perch, spot-tail shiners, emerald shiners, and sheepshead.



Yellow perch

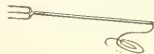
Yellow perch of the 1959-year-class continue to be the dominant species and age group. Especially large concentrations were found at the 8- to 10-foot depth in the East Harbor area. Males predominated; females

were more scattered and restricted largely to deeper waters offshore. These 3-year-old perch now range from about 6.6 to 9.3 inches in length; males average about 7.4 inches and females about 8.0 inches.

Unusually warm weather during April increased water temperatures from 38° to a high of 55° F. at the end of the month (approximately 9° higher than on the same date in 1961). Yellow pike spawning was all but completed by the end of April and yellow perch were fast approaching peak spawning activity.

Spring sampling of the commercial catch was begun at the major ports along the south shore. Sufficient scale collections were taken from the majority of the species desired, with the exception of blue pike. Commercial operators caught large numbers of perch, but many were undersize. Landings of yellow pike were considerably less than in April 1961.

Note: See Commercial Fisheries Review, June 1962 p. 17.



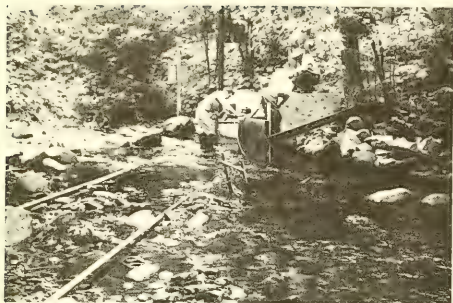
Great Lakes

YEARLING LAKE TROUT PLANTED IN LAKE SUPERIOR:

Nearly 1,760,000 yearling lake trout were released in Lake Superior during late May and early June in a continued effort to rejuvenate that Lake's sagging lake trout fishery. This spring's plantings were the largest made since the lake trout restocking program was started in 1959 under direction of the Great Lakes Fishery Commission.

State and Federal hatcheries in Michigan increased the number to 920,000 yearlings as compared with 560,000 last year. Ontario contributed 583,550 young lake trout to the rehabilitation program, while Wisconsin added another 256,000.

Latest lamprey control studies provide an encouraging note for lake trout survival under the stepped-up planting schedule. A sizable drop in the rate of fresh lamprey scarring on lake trout in different areas of Lake Superior has been reported. Also, only 88 lampreys had shown up at electrical weir barriers in Lake Superior streams through the end of April. A year ago,



Sea lamprey electrical barrier.

about 1,185 of those eel-like predators had been captured at the same barriers.

Michigan's plantings include 94,400 yearlings reared at that State's Conservation Department's Watersmeet Hatchery. They were set free offshore from Ontonagon. Another 70,000 lake trout were planted near Whitefish Bay from the Department's Harrietta Hatchery.

The spring schedule also called for planting 125,000 young trout in the Apostle Islands area where another release of that size will be repeated this fall. The Marquette-Munising area was due for a shoreline planting of 314,500 yearlings in late May or early June; another 315,500 trout will be turned loose at a Lake Superior site not yet determined. Stock for the plantings will come from the U. S. Fish and Wildlife Service hatchery at Pendills Creek.

Approximately 97,000 lake trout were trucked from the U. S. Fish and Wildlife Service hatchery at Charlevoix late in May for release in Lake Michigan. This was the last in a series of experimental plantings to learn more about the distribution, movements, and survival of hatchery trout in that Lake. (Michigan Department of Conservation, May 17, 1962.)



Industrial Products

FISH MEAL, OIL, AND SOLUBLES:

Major Indicators for U. S. Supply, April 1962: For the first three months of 1962,

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, April 1962					
Item and Period	1962	1961	1960	1959	1958
..... (Short Tons)					
Fish Meal:					
Production 1/:					
June	-	53,162	44,233	52,006	30,949
May	-	32,922	17,194	25,312	17,433
April	7,000	6,179	5,076	8,810	5,143
Jan.-Mar.	7,088	7,556	7,146	7,345	6,518
Jan.-Dec. preliminary tot. 2/	-	289,039	257,969	275,396	216,510
Jan.-Dec. final tot.	-	311,265	290,137	306,551	248,140
Imports:					
June	-	19,317	11,178	10,836	9,091
May	-	24,753	9,496	16,329	8,949
April	-	19,060	10,397	17,654	11,758
March	18,528	20,458	18,652	16,719	7,233
Jan.-Feb.	44,246	23,875	16,652	39,163	18,915
Jan.-Dec. totals ..	-	217,845	131,561	132,955	100,352
..... (Short Tons)					
Fish Solubles:					
Production 3/:					
June	-	17,772	20,735	26,756	16,561
May	-	13,629	7,370	18,639	9,351
April	2,690	2,965	2,870	6,987	3,619
Jan.-Mar.	6,384	5,834	5,971	6,506	3,889
Jan.-Dec. totals ..	-	112,241	98,929	165,359	130,177
Imports:					
June	-	207	149	202	137
May	-	283	59	4,874	1,405
April	-	220	134	1,522	45
March	308	135	87	410	84
Jan.-Feb.	2,522	374	2,089	1,357	622
Jan.-Dec. totals ..	-	6,733	3,174	26,630	14,567
..... (1,000 Gallons)					
Fish Oil:					
Production:					
June	-	6,296	4,672	4,826	3,267
May	-	4,367	1,768	2,604	2,166
April	530	440	248	436	200
Jan.-Mar.	161	162	168	144	179
Jan.-Dec. preliminary tot. 4/	-	33,471	26,690	24,418	21,625
Jan.-Dec. final tot.	-	34,416	27,886	24,978	22,628
Exports:					
June	-	280	208	1,514	242
May	-	426	324	1,455	293
April	-	980	761	1,116	254
March	-	753	421	600	1,664
Jan.-Feb.	2,954	4,121	3,453	1,897	1,863
Jan.-Dec. totals ..	-	10,331	19,155	19,264	12,539

1/Does not include crab, shrimp, and misc. meals.

2/Preliminary data computed from monthly data. Fish meal production reported currently comprised 86 percent of the annual total for 1958, 90 percent for 1959, 89 percent for 1960, and 92 percent for 1961.

3/Includes homogenized fish.

4/Preliminary data computed from monthly data. Represents over 95 percent of the total production.

Note: Data for 1962 and 1961 are preliminary.



In some instances spotter planes are used in the Gulf of Mexico to spot schools of menhaden and to direct the setting of the purse seine. This bell-shaped loudspeaker helps to maintain radio contact between the spotter plane and the purse boats that set the net.

fish meal production was down, solubles production was up, and fish oil production was slightly less than in the same period of 1961.

U. S. Production, April 1962: Preliminary data on U. S. production of fish meal, oil, and solubles for April 1962 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.

U. S. Production 1/ of Fish Meal, Oil, and Solubles, April 1962 (Preliminary) with Comparisons				
Region	Meal Short Tons	Oil 1,000 Gallons	Solubles .. (Short Tons) ..	Homog- enized
April 1962:				
East & Gulf Coasts ..	4,861	486	939	3/425
West Coast 2/ ..	2,194	43	2,084	-
Total	7,055	529	3,023	425
Jan.-Apr. 1962 Total	14,638	719	7,769	655
Jan.-Apr. 1961 Total	13,735	601	7,187	633

1/ Does not include crab meal, shrimp meal, and liver oils.

2/ Includes Hawaii, American Samoa, and Puerto Rico.

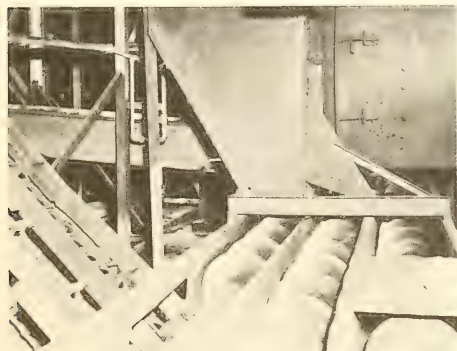
3/ Includes condensed fish.

U. S. Production, March 1962: During March 1962, 2,500 tons of fish meal and scrap and 42,400 gallons of marine-animal oils were produced in the United States. Compared with March 1961, this was a decrease of 9 percent in meal and scrap production and 34 percent in oil.

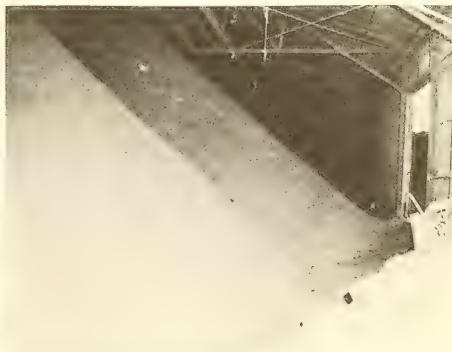
In March 1962, tuna and mackerel accounted for 1,600 tons or 64 percent of the meal total, and 31,200 gallons or 74 percent of the oil production.

There were 1,800 tons of fish solubles produced in March 1962--583 tons below the same month in 1961. The production of homogenized condensed fish amounted to 100 tons--a decline of 78 tons compared with March 1961.

During the first three months of 1962, meal and scrap production amounted to 7,300



Discharge end of hot-air dryer in an Empire (La.) menhaden products plant. Screw conveyor is used to transport the scrap.



Heaps of scrap meal in the warehouse of an Empire (La.) menhaden products plant. When fishing is good, large quantities of scrap accumulate. This scrap is ground into fish meal.

Table 1 - U.S. Production of Fish Meal, Oil, and Solubles, March 1962 with Comparative Data

Product	March		Jan.-Mar.		Total
	1962 1/	1961	1962 1/	1961	1961
..... (Short Tons)					
<u>Fish Meal and Scrap:</u>					
Herring, Alaska	-	-	-	-	3,810
Menhaden 2/	-	-	-	531	247,551
Sardine, Pacific	-	-	689	-	2,518
Tuna and mackerel	1,596	1,972	4,524	4,852	21,243
Unclassified	899	779	2,080	2,162	16,215
Total	2,495	2,751	7,293	7,545	291,337
Shellfish and marine animal meal and scrap	3/	3/	3/	3/	19,928
Grand total meal and scrap	3/	3/	3/	3/	311,265
<u>Fish solubles</u>	1,803	2,386	4,876	5,556	100,551
Homogenized condensed fish	100	178	230	278	11,690
..... (Gallons)					
<u>Oil, body:</u>					
Herring, Alaska	-	-	-	-	727,517
Menhaden 2/	-	-	-	-	31,355,570
Sardine, Pacific	-	-	19,111	-	86,167
Tuna and mackerel	31,182	48,840	103,684	100,748	762,509
Other (including whale)	11,197	15,167	62,944	73,549	1,477,042
Total oil	42,379	64,007	185,749	174,297	34,408,805
1/ Preliminary data.					
2/ Includes a small quantity produced from thread herring.					
3/ Not available on a monthly basis.					

tons--252 tons below the same period of 1961; the marine-animal oil yield totaled 185,700 gallons--a gain of 11,500 gallons.

* * * * *

Imports and Exports, February and March 1962: Imports of fish meal and scrap totaled 18,800 tons during February and 18,500 tons in March 1962. Imports during the first three months of 1962 amounted to 62,800

tons--an increase of 18,400 tons compared with the same period of 1961.

Exports of fish and fish-liver oils amounted to 21.6 million pounds in February and 19.2 million pounds during March 1962. A total of 41.3 million pounds of fish and fish-liver oils was exported during the first three months of 1962--up 4.8 million pounds as compared with 1961.

Table 2 - U. S. Foreign Trade in Selected Industrial Products, February and March 1962 with Comparative Data

Product	February		March		Jan.-Mar.		Total
	1/1962	1961	1/1962	1961	1/1962	1961	1961
..... (Short Tons)							
<u>Imports:</u>							
Fish meal and scrap	18,819	14,344	18,528	20,458	62,774	44,333	217,845
Fish solubles	2,249	155	308	135	2,830	509	6,739
..... (Gallons)							
Whale oil, sperm (crude and refined)	275,556	-	140,408	665,260	718,998	1,026,497	7,807,625
..... (Pounds)							
<u>Exports:</u>							
Fish and fish-liver oils ..	21,646,639	17,456,076	19,167,132	5,644,202	41,323,030	36,549,073	122,485,721
Whale and sperm oil	68,273	-	2,923	1,928	85,178	1,928	1,205,674
1/ Preliminary data.							



Maine

FISHERY LANDINGS, 1961:

Landings of fish and shellfish at Maine ports in 1961 amounted to 198 million pounds valued at \$19 million. Compared with 1960, this was a drop of 96.7 million pounds or 33 percent in volume, and \$1 million or 5 percent in value.



Fig. 1 - Baiting a lobster pot aboard a New England lobster boat.

Sea herring (54.5 million pounds) was nearly 98 million pounds below the production in 1960. Ocean perch (77.4 million pounds) accounted for a decrease of almost 1 million pounds. These two species made up 67 percent of the year's total catch. Landings of Maine lobsters (20.9 million pounds) dropped 3.1 million pounds below 1960, while whiting (14.1 million pounds) landings increased 3 million pounds.

Knox County led all counties in production with 76.1 million pounds. Cumberland County was second in volume with 74.5 million pounds, and Hancock County third with

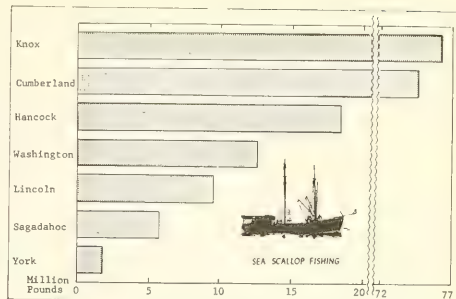


Fig. 2 - Landings at Maine ports by counties, 1961.

18.2 million pounds. Washington County accounted for 12.5 million pounds, while Lincoln, Sagadahoc, and York Counties contributed 9.4, 5.7, and 1.6 million pounds, respectively.

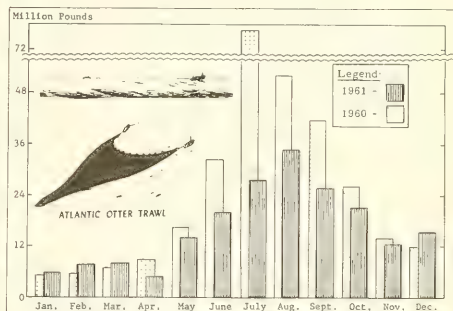


Fig. 3 - Landings at Maine ports by months, 1960-1961.

Landings in August were the highest of any month during the year with 34.3 million pounds. July was the second highest month in production with 27.3 million pounds. September followed with 25.9 million pounds, and October with 21 million pounds.

More than one-half of the 1961 catch was taken by otter trawls--101.6 million pounds. The remaining 96.4 million pounds were taken by several other types of gear.

Imports of Canadian sea herring through Maine ports during 1961 amounted to 43.5 million pounds--41 percent below 1960. Imports during the months of August, July, September, and January totaled 26.1 million pounds or 60 percent of the total imports in 1961.



Maine Sardines

CANNERS AWAIT ARRIVAL OF 1962 RUNS OF FISH:

With total production of only 15,541 cases of canned sardines from December 1, 1961,



to April 7, 1962, and the lowest inventories in the history of the industry, Maine sardine canners are awaiting the expected 1962 heavy runs of fish.

If the average pattern for the past 14 years materializes, the tiny herring were expected to arrive in the inshore areas of Maine the latter part of May, although a full moon phase starting on the 19th was expected to delay good fishing conditions somewhat. The fish usually keep near the bottom in deep water during periods of light.

A total of 31 plants are in readiness for packing and the industry is in urgent need to replenish its stocks and to regain the shelf space that it has lost in several hundred thousand stores as a result of the critically short pack of 679,000 cases in 1961.

The Maine Legislature in a Special Session last fall extended the official April 15 to December 1 season to permit year-round canning on a temporary basis, but this has not been successful. Windy weather and rough seas for most of the winter and early spring have handicapped the fishermen despite efforts to fish.

If history is any criteria, there is no indication that the 1961 short pack should be repeated, according to the Executive Secretary of the Maine Sardine Council. He said that the industry had never had two critically bad fish years in a row since it was established in 1872.

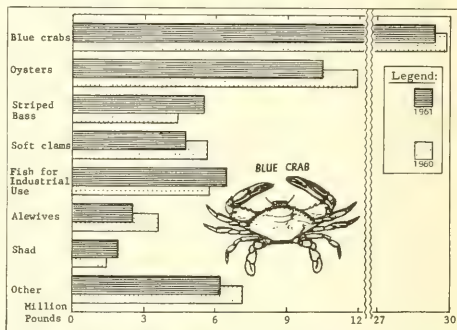
Previous to 1961, the last such year was 1938 when production was less than 600,000 cases. However, the following year saw plenty of fish and a banner pack of 2,250,000 cases.

Holdings of canned Maine sardines by wholesalers and multi-unit retail organizations were down 45 percent from last year on April 1 and canners' inventories were down 91 percent.

Maryland

FISHERY LANDINGS, 1961:

Landings of fishery products at Maryland ports during 1961 amounted to nearly 66.5 million pounds valued at \$12.8 million. Compared with 1960, this was a drop of 4 percent in volume and 8 percent in value. Lower catches of oysters, alewives, fluke, spot, croaker, soft clams, and blue crabs were mainly the cause of the decline.



Maryland landings of certain species, 1961 and 1960.

Oyster production continued downward in 1961--1.4 million pounds below 1960. The 1961 calendar year oyster yield was the lowest for which data are available for Maryland.

Hard blue crab production of 26.7 million pounds dropped nearly 2 percent below 1960. Ex-vessel prices averaged \$3 to \$4 per barrel for "picking" crabs. Prices were low all season due to a good supply and lighter demand. Soft blue crab production dropped 3 percent below last year.

The 1961 soft clam catch (4.7 million pounds of meats) was 877,000 pounds below 1960. This was the first year the catch dropped since the fishery began in Maryland 10 years ago. The fishery is still suffering from a limited market. The State can produce more clams than can be sold. Ex-vessel prices averaged \$3 per bushel in most areas.

Hard clam production rose considerably during 1961, due mostly to the passage of a bill allowing the use of clam scrapes in Worcester County. The 1961 production of this item was 285,000 pounds of meats above 1960.

The finfish catch amounted to 21.4 million pounds in 1961--a gain of only 200,000 pounds as compared with 1960. Lower catches of alewives, spot, fluke, and croaker were offset by increased landings of striped bass, white perch, shad, and menhaden. The alewife catch (2.4 million pounds) and croaker catch (48,000 pounds) were the lowest of any year on record in Maryland. The previous low years were 1945 with 2.5 million pounds of alewives, and 1904 with 166,000 pounds of croaker. The spot catch (9,500 pounds) was the second lowest on record, exceeded only by the years 1897 and 1908 when only 3,000 pounds were reported. There were record high catches of striped bass, white perch, and cod. Striped bass landings (5.4 million pounds) were 1 million pounds above the previous record high year of 1960. The cod catch of 789,000 pounds was 243,000 pounds above the previous record year of 1960. The active cod fishery is relatively new to Maryland, having started in 1959 when, in the absence of dragger fish, some vessels fished with long lines. In 1961, there were 24 vessels engaged in long-line fishing.



Massachusetts

FISHERY LANDINGS, 1961:

Landings by fishing craft at Boston, Gloucester, New Bedford, and other Massachusetts ports in 1961 amounted to 431.6 million pounds valued at \$32.9 million. These landings dropped 12.3 million pounds or 3 percent in quantity, but were up \$1.1 million or 3 percent in value as compared with 1960.



Fig. 1 - A scallop fishing vessel docked at New Bedford, Mass.

During 1961, receipts at Gloucester comprised 38 percent of the total poundage and 18 percent of the total value. Boston was second in volume with 27 percent and value with 29 percent. New Bedford ranked third in volume with 23 percent, but first in value with 45 percent. Landings at other Massachusetts ports made up the remaining 12 percent in quantity and 8 percent in value.



Fig. 2 - Unloading a small dragger at the State Pier in Gloucester, Mass.

Landings in July were the highest of any month during 1961 with 62.2 million pounds. August was the second highest month with 60.9 million pounds, followed by May with 40.2 million pounds, October with 40.1 million pounds, and September with 37 million pounds.

* * * * *

NEW LAW FOR IMPORTED PRODUCTS:

A law regulating the sale, offering for sale, and advertising the sale of imported goods, including fish and fishery products, was enacted on March 12, 1962, by the Massachusetts State Legislature. The law is "Chap. 206, An Act Further Regulating the Sale or Offering for Sale and Advertising the Sale of Imported Goods, Fish and Fish Products."

Sellers of foreign goods, including scallops and fish and fish products, must now display in a conspicuous place, in letters at least as large as the figures indicating the price of the goods to be sold, a sign marked "Imported Goods." Likewise, goods having an individual price marking must bear either the words "Imported Goods" or show the country of origin.

Similar controls are placed on advertising; but in this instance, newspapers and radio and television stations furnishing an advertising medium for sale of goods or fish and fish products by another are not subject to penalty.

Violations are punishable by fine and/or imprisonment--\$50-100 for the first offense and \$50-500 or imprisonment for one month or both for each subsequent offense.



Michigan

LAKE TROUT EGG SURPLUS EXPECTED:

In a report of the meeting of the Lake Trout Rehabilitation Committee at Milwaukee, Wis., on March 6 and 7, 1962, it was brought out that the expected production of lake trout eggs at Michigan hatcheries will exceed the number that can be handled at existing State and National Fish Hatcheries in 1962 and 1963. It is estimated that Michigan State hatcheries at Marquette and Harriette will produce 8 million lake trout eggs in 1962; and even with a stepped-up rearing program at all participating State and national hatcheries, a surplus of 3 million eggs is expected.



Fig. 1 - The eggs are taken from the female, fertilized with the sperm or milt from the male, and transferred to the hatchery.

Original plans for the construction of the Jordan River, Mich., National Fish Hatchery anticipated the completion of facilities in time to absorb the 1963 increase in lake trout egg production. Apparently, the egg production program is one year ahead of schedule, and the completion of the Jordan River hatchery may be delayed until 1964 if adequate construction funds are not included in the 1963 appropriation. The 1963 budget, as



Fig. 2 - As the yolk sacs are absorbed, the young trout swim up from the bottom of the troughs and are fed diets of packinghouse byproducts; later, livestock feeds are added.

passed by the House of Representatives on March 20, 1962, included \$101,000 of the \$467,000 needed to complete the hatchery. It has been estimated by the Michigan Department of Conservation that there will be a surplus of 8 million lake trout eggs in the fall of 1963 if the Jordan River National Fish Hatchery is not in operation.



National Fisheries Institute

ANNUAL CONVENTION IN NEW ORLEANS:

The Seventeenth Annual Convention of the National Fisheries Institute (NFI), the trade association of the United States fishing industry, was held at the Roosevelt Hotel, New Orleans, La., April 27 through May 1, 1962. It was attended by about 700 producers, processors, and distributors of fishery products, involving consumer purchases of one billion dollars a year.

On April 27, the NFI Industrial Products Division met. The discussions centered around the 1962 fish meal, oil, and solubles production; the depressed fish oil market; and the standard of identity for fish protein concentrate as proposed by the U. S. Food and Drug Administration. On the same day there were executive and other committee meetings, including a Processed Shrimp Committee meeting. At the Shrimp meeting, the principal discussions were on a revision of the breaded shrimp standard; a proposed grade standard for frozen raw, peeled and deveined shrimp; and the pending standard of identity for breaded shrimp to be issued by the U. S. Food and Drug Administration.

The First General Session of the Convention, a Small Business Luncheon, and a Small Business Clinic were held on April 28. On Sunday, April 29, there were meetings of other local and national association groups and committees. Also, there was a meeting on Public Relations where the fishing industry's two major promotion programs were discussed: "National Fish in Seafood Parade" (the fall promotion) and "It's Fish in Seafood Time" (the Lenten promotion).

The Second and Third General Sessions of the Convention took place on Monday, April 30.

On Tuesday, May 1, the Seafood Radiation Pasteurization Committee met.

Among some of the other fishery associations that met during the convention were: the National Shrimp Breeders Association; the Board of Directors of the Shrimp Association of the Americas; the American Seafood Distributors Association; the Halibut Association of North America; and the Board of Directors of the National Shrimp Congress.

The U. S. Bureau of Commercial Fisheries Market News Service set up a temporary office together with a teletype. Each day the Convention was in session, information was received over the teletypewriter on current landings, receipts, prices, and market trends as transmitted by the Fishery Market News Service Field Offices throughout the country. A total of 1,200 visitors stopped at the temporary office to obtain information.

"The fishing industry should adopt principals, not policies," Dr. Noah Langdale told members of NFI in his address on April 30 at a general luncheon. Speaking on the subject of "Ethics and the Business Man," the speaker outlined the five elements of business--materials, money, machines, markets and man--and stressed the importance of good individual and collective motive as being essential to the continued progress of the industry. Langdale is President of Georgia State College.

Fishing Industry Seeks Greatly Expanded Sales: At the First General Session of the Convention on April 28, plans were revealed for greatly expanded sales during the next few years. Basing their optimism on the fact that 85 percent of the fishery products now available in retail stores were not even on the market ten years ago and also the fact that the per capita consumption of their products took a spurt upward in 1961 for the first time in ten years, the fisheries group was talking of still more new processing methods. Some were predicting that the next ten years would see as radical changes as the past ten when pre-cooked and portioned products made their appearance.

The keynote of the group's outlook was sounded by Harvey H. Bundy, Jr., Boston, President of the Institute, in his opening speech.

"For the first time in the last ten years, there has been a substantial improvement in the per capita consumption of fish and seafood in the United States. When this is superimposed on the normal population increase and the resulting increase in our sales, it foretells substantial growth for our industry," he said.

"A significant factor in this increased consumption has been a growing recognition of the healthful qualities of our products. Medical authorities, like Dr. Fredrick Stare, Director of Public Health, Harvard University, have indicated that we Americans would be well advised to increase the amount of fish and seafood we consume," Bundy said.

He called for more Liberal tariff regulations and Federal subsidies to enable the American seafood producers to compete with overseas fishing boat builders. He also indicated that the industry is encouraging the develop-

ment of a national fisheries center in Washington and is asking governmental permission to sell fish flour as a food for human consumption. Presently such flour cannot be offered for sale for human consumption under rules of the Federal Food and Drug Administration.

Fishery Products a Dynamic and Profit Opportunity: A national shipping executive called on the fishing industry to allot more funds for expanded nutritional and medical research programs on fish and fish products for a healthier America and a healthier economy for the industry. In an address on April 28 at the First General Session of the Convention, he emphasized that these expanded nutritional research projects must be well planned, well sponsored, and when completed and analyzed "the whole industry must support them in promoting them to the public." He also called upon representatives of the fishing industry and the industry itself to increase their advertising budgets to sell more of their products to meet the "increased competition for the food dollar."

Government Aid For Small Business: "We are eager to help small firms of your industry," John E. Horne, Administrator of the U. S. Small Business Administration (SBA), told members of the Institute on April 28 at a luncheon preceding a Small Business Clinic.

In outlining the services of the SBA, he emphasized those which the fishing industry could take advantage of: (1) financial assistance to small businesses through direct Government loans in which banks and SBA participate; (2) indirect financial assistance to small firms through privately owned, but SBA-licensed, investment companies; (3) loans to businesses which have been damaged or destroyed by natural disasters, or have suffered because of displacement by Federally-financed projects; (4) help to small business in obtaining a fair share of Government purchases; and (5) assistance to small businesses in overcoming management problems.

"In its lending program," Horne reminded his audience, "SBA does not compete with private lending institutions. Before we consider an application, a businessman must show he is unable to obtain financing from a private institution."

In helping small firms with management problems, SBA provides personal counseling, issues a variety of helpful publications, and acts as co-sponsors of management courses for businessmen.

The speaker also told of an SBA-sponsored research study now under way at the University of Miami of special interest to the shrimp industry. This study is aimed at improving the operation of the small fisheries for shrimp in the Atlantic and Gulf coast areas by exploring the technical and economic feasibility of utilizing scrap fish, as well as large quantities of other usable material, that is now being wasted.

The luncheon talk by the SBA Administrator was followed by a Small Business Clinic. Panel members and those present discussed the problems of the small fishery firm.

Month-Long National Promotion to Feature Seafood Plate Contest: Plans for an industry-wide fisheries

promotion throughout the entire month of October, featuring a hotel and restaurant Seafood Plate Contest with 13 valuable prizes, were announced on April 29 by the Fish and Seafood Promotions Division of NFL.

Five fishing industry leaders participated in a panel presentation at an open meeting during the convention, at which plans were outlined and reports of results of the promotional work during the past year were given.

"We have charted a course for the 1962 Fish 'n Seafood Parade, which gives it greater scope, greater appeal and a more direct tie-in with every segment of our industry," said the Chairman of the 1962 Fish 'n Seafood Parade in presenting the plans for an expanded fall promotion. "In the past, the Parade has been a one-week promotion. After careful consideration, our committee decided to extend the promotion throughout October. This expansion of the period will enable us to avoid the variable dates of the promotion from year to year; the uncertainty of fresh fish supply in any one week; the conflict with variable dates of religious holidays and the conflict with individual promotions of the big chains.

"... we have decided to sponsor a Seafood Plate Contest for owners, managers, and personnel of restaurants and mass-feeding operations. Participants will be asked to submit seafood plates of their own creation, bearing in mind appetite appeal, inventiveness, practicality, and flavor. Entries will be judged in three categories: (1) portions of fish; (2) fillets, steaks and other fish; (3) shellfish. Winners will be selected by a panel of editors of restaurant and other mass feeding magazines.

New Processing Methods and New Fishery Products: This was the subject on April 30 of the Second General Session of the Convention.

On the subject of fish protein concentrate, attention was called to the role that it could play in relieving the hunger that affects two-thirds of the world's population. It was pointed out that such a fish protein concentrate can contribute significantly to the problem of world food shortage and will boost our local fisheries industries by providing them with a new multimillion dollar outlet and creating new markets, both in this country and abroad.

A representative of the Atomic Energy Commission (AEC) discussed the goals desired and the problems to be solved by government, educational and industrial researchers in the radiation preservation of fish and shellfish. The objective of the program, he stated, is "to double or even triple the storage life of fresh seafoods by exposing them to low doses of radiation from radioisotope or machine sources, and then storing at refrigerated temperatures. This process might be termed 'radiopasteurization.' ... Since seafood is so desirable for its vitamins and high protein content as well as for its high degree of palatability, researchers must study the effect of radiation on the protein, fatty acid, and vitamin content of the radiopasteurized fish. Present results indicate that they will contain adequate amounts of these essential nutrients. Initial studies also give expectation that correct radiation levels will extend the refrigerated storage life of fishery products to several times that of unirradiated products without significantly affecting desirable odor, texture, or flavor."

Citing the results of a market study by the U. S. Department of Interior's Bureau of Commercial Fisheries, the AEC representative stated that "initial consumer resistance and the cost of an appropriate educational program were given as the main disadvantages." However, many of those interviewed during the study--processors, distributors, home economists, food editors, and other business and food specialists, "reported that they were impressed by the prospects of preservation of fishery products through radiation but preferred to withhold final judgment until the results of further research are known."

Outlining experimental work now in progress, and future program plans of the AEC, Dr. Aebersold expressed confidence that "the use of radiation to extend the shelf life of fish will be used commercially and with benefit to the housewife, producer, processor, and distributor."

Frontiers in Fisheries: The Under Secretary of the U. S. Department of the Interior, the principal speaker at the Second General Session on April 30, told the Convention that the manufacture of an economical fish flour or fish protein concentrate can be a valuable answer to the world's hunger problem and a boon to the United States fishing industry--once the processing flaws are worked out and mass production started. Carr said that this fish protein concentrate is highly nutritious and can be easily transported and stored. If it can be produced cheaply enough it can be both a blessing to humanity and can give a real boost to this country's domestic fishing industry.

Carr said that fish are the only readily available source of inexpensive animal protein in sufficient quantities to remedy widespread malnutrition and undernutrition in the world which is caused by protein deficiency in diets.

"Fish can supply these diet deficiencies in the form of concentrated protein," the secretary said. "Wisely utilized and managed, the sea with its vast fish populations represents an almost unlimited reservoir of high quality protein."

He emphasized also that mass production of a satisfactory fish protein concentrate in the form of fish flour "would provide a tremendous economic stimulation for the United States fishing industry." He said it would also provide a market for the great quantities of fish which are inadvertently caught with the more valuable varieties and now discarded at sea because there are no markets for them.

Carr pointed out that if fish processors were able to manufacture fish flour, periods of surplus in the fishing industry and fish markets would tend to stabilize "and starving individuals the world over would benefit."

The Under Secretary mentioned that the United States might very well be a market for this fish protein concentrate--as a supplement to breakfast cereals and baby foods. In addition, he said that cookies, doughnuts, noodles, and other foods could be transformed into improved quality protein foods when supplemented by fish flour.

"In the event of a nuclear emergency, United States fisheries alone could supply in one fishing season more than the protein required to sustain the entire United

States population during the crucial days immediately following such an emergency," Carr said.

In regard to the European Common Market and its effect on the United States fishing industry, Carr said he believed it is possible that changes in buying habits brought about by higher standards of living in the Common Market may have beneficial effects on total trade--including the fish trade.

"A greater use of edible fishery products may be among the favorable effects of a high consumer income," he said.

Resolutions Adopted: The Convention adopted the following resolutions:

1. **CONFIDENTIALITY OF BUSINESS REPORTS TO GOVERNMENT:** "...the proper Legislative Committees of the Congress be urged to immediately schedule public hearings and take whatever action is necessary to protect the confidentiality of business reports to Government."

2. **NEED FOR FISHING VESSEL LEGISLATION:** "...Whereas, the laws of the United States prohibit the purchase of vessels from abroad and require that fishing vessels be constructed in foreign yards, thus making it impossible for the United States industry to economically compete on the high seas, and ...be it resolved that the seriousness of the United States high seas fishing vessel situation be brought to the attention of the President of the United States and the Congress of the United States, together with an appeal for immediate necessary Executive and Legislative action."

3. **LEGISLATION TO AUTHORIZE A NATIONAL FISHERIES CENTER AND AQUARIUM:** "...the National Fisheries Institute make an urgent appeal to the Honorable Jennings Randolph, Chairman of the Senate Subcommittee on Public Grounds and to the Honorable Dennis Chavez, Chairman of the Senate Committee on Public Works, to expedite action on said legislation; and be it further resolved that the National Fisheries Institute request the President of the United States to take such executive action as may be necessary to recommend immediate adoption of pending legislation to authorize a National Fisheries Center and Aquarium in the nation's Capital."

4. **CONTENTS OF FISH BLOCKS, FISH STICKS, AND FISH PORTIONS:** "...it is the sense of the National Fisheries Institute, ... that the terms fish blocks, fish sticks and fish portions are proper only when they are composed solely of substantially whole fillets and/or pieces of fillets but not of ground, flaked, minced, comminuted or finely chopped fish flesh.

"Items made from the latter have a definite place as food but not as material for sticks or portions which have been generally accepted by the consuming public and understood to be made from larger sized sections of fish fillets.

"It is suggested that clearly distinguishable names be used for products processed from this other material."

5. **FROZEN FOODS WEEK:** "...the National Fisheries Institute actively cooperate with the National Frozen Foods Association in the promotion of National

Frozen Foods Week during May of each year and that the staff of National Fisheries Institute utilize its communication media to advise its members of the dates and promotional activities and possible tie-ins with National Frozen Foods Week each year."

6. **TITLE OF DIRECTOR EMERITUS:** "...WHEREAS, Captain John G. Murley, of Fairhaven, Massachusetts, was one of the original members of the National Fisheries Institute and has served continuously on the Board of Directors from Region I since the beginning of the organization, thus making an outstanding contribution to the success of the organization; therefore, be it resolved that the title of Director Emeritus be conferred upon Captain John G. Murley."

7. **PROPOSED REGISTRATION OF EXEMPT AND PRIVATE CARRIERS:** "...the National Fisheries Institute, ... vigorously oppose legislative efforts to directly or indirectly narrow the effectiveness of the fishery exemption (for motor carriers), including the proposed registration requirements, but reaffirm its support for maximum enforcement of I.C.C. safety regulations affecting all highway users, such enforcement to be continued by the Federal, State and Local regulatory bodies presently responsible therefor."

8. **EXTENSION OF MOTOR CARRIER EXEMPTION TO RAILROADS:** "...the National Fisheries Institute, ... reaffirm its support for the preservation of Section 203 (b) (6) of the Interstate Commerce Act which makes possible the expeditious and flexible distribution of the fishery industry's highly perishable products without burdensome administrative regulation, and to further support the President's recommendations for the equalization of competition between rail and motor carriers serving the fishery industry."

New NFI Officers: Louis Vitale of Pasadena, Calif., was elected President of the National Fisheries Institute at the closing session of the Convention. He succeeds Harvey H. Bundy, Jr., Gloucester, Mass., who becomes Chairman of the Board. The new President assumes his new duties on September 1, 1962.

Other officers elected were: Louis Goldstein, Philadelphia, Pa., President-elect; Palmer Olson, Seattle, Wash., Secretary; Thomas C. Thomas, Wilkes-Barre, Pa., Treasurer; and Sidney H. Cohen, Boston, Mass., Treasurer-elect.

New General Manager for NFI: "No foods have a greater future than fish and shellfish. I am, therefore, looking forward with great enthusiasm to my work with the National Fisheries Institute," said F. P. Longeway, Jr., newly-appointed General Manager of NFI. Longeway succeeds Charles E. Jackson, who is retiring. Longeway further stated that he felt the increase of one-half pound per capita of fishery products during 1961 was indicative of the importance of the industry.

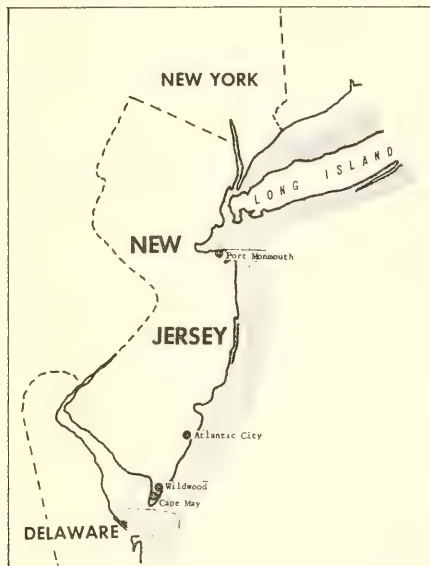
"The great variety of seafoods and many methods of their preparation add infinite interest to American menus," he said. "Fish and shellfish are generously endowed with food values of the highest quality, and their fats are of the polyunsaturated type, which counteract the harmful effects of saturated fats, number one suspect in heart disease and hardening of the arteries. Therefore, I welcome the opportunity of being of service to the industry which represents foods which mean so much to the health and well-being of our country."



New Jersey

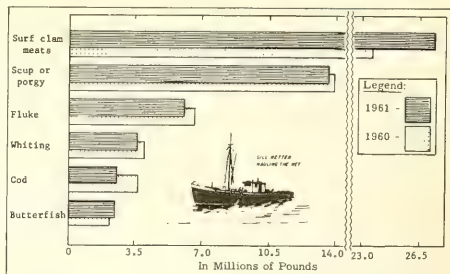
FISHERY LANDINGS, 1961:

Landings of fish and shellfish at New Jersey ports during 1961 totaled 397 million pounds with a value of nearly \$11 million. Compared with 1960, this was an increase of 6 percent in quantity and 13 percent in value. The catch for industrial use was up 22.6 million pounds, while that for food increased 1.2 million pounds.



In 1961 fish (principally menhaden) and shellfish used for industrial products amounted to nearly 331 million pounds, while the quantity used for food totaled over 66 million pounds. Surf clam meats and scup or porgy made up 61 percent of the edible items. Other important food species were fluke, whiting, cod, butterfish, hard clams, lobsters, oysters, and hake.

Compared with 1960, the 1961 catch of surf clams was up 14 percent--a record year for this species. Landings of striped bass were more than triple the quantity landed in the previous year. As a result of the opening of oyster seed beds which had been closed for 3 years, the oyster



New Jersey's catch of certain fish and shellfish, 1960 and 1961.

catch was up in 1961. The catch of cod and sea bass was lower than in 1960 by 33 percent and 32 percent, respectively.



North Atlantic Fisheries Exploration and Gear Research

MIDWATER TRAWL GEAR TESTED:

M/V "Rorqual" Cruise 62-1 (April 18-May 25, 1962): The Bureau's 65-foot research vessel Rorqual has undertaken explorations with midwater-trawl gear similar in design to that used by the Bureau's vessel Delaware.

Initial effort carried out in Massachusetts Bay waters was devoted to testing of equipment which included combination electrical-conductor/towing-warp, the use of which eliminates the need for a "third" wire to the depth-sounder transducer mounted on the headrope of the net.

After the gear had been satisfactorily tested the operation was devoted to scouting for fish schools and sampling.

Location of fish was accomplished by the use of sounding equipment continuously operated from the vessel. Upon reception of traces indicating concentrations of fish, sets were made to sample the fish. Herring were taken in each of the 5 midwater-trawl tows completed.

Scouting transects were made in depths from 15 to 55 fathoms along the southwest-



Catch of 4,000 pounds of sardine-size herring taken during a one-hour midwater-trawl tow in Cape Cod Bay.

ern Maine coast from the Isles of Shoals to Casco Bay. No significant signs of fish were seen and no fishing was done at that time.

Note: See Commercial Fisheries Review, May 1962 p. 23.

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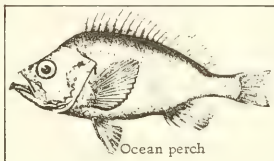
MIDWATER TRAWL TESTED IN FISHING FOR OCEAN PERCH:

M/V "Delaware" Cruise 62-5: To test the effectiveness of the midwater trawl in taking schooled ocean perch during the nighttime when the fish come off the bottom was the principal purpose of the May 7-18, 1962, cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. Particular care was taken to record the action and operation of the net under deep water conditions.

Scanning and scouting operations were conducted until fish concentrations were found. Fishing was conducted in the vicinity of Wildcat Knoll, 30 miles northeast of Provincetown, Cape Cod, and in Western and Eastern Holes, 15 to 20 miles southeast of Cape Sable, Nova Scotia. Toward the end of the cruise, operations were shifted to more shoal areas

on Georges Bank and off Nauset Beach for additional net performance tests.

In general, fish behavior was not conducive to successful midwater trawling. During the mornings, the fish gathered 2 to 5 fathoms above the bottom before settling. In the evenings, the fish rose 2 to 3 fathoms above the bottom and dispersed. The periods when off-the-bottom schooled fish were available were not longer than 25 minutes. Attempts to take



Ocean perch

to take fish during those times were not particularly successful as the slow towing speed necessary to keep the net so close to the bottom allowed the fish to easily go under the net; this was clearly indicated by the headrope-mounted sounder transducer. Ocean perch were readily taken when the net was experimentally dropped to the bottom; this gear, however, is not designed to replace standard ocean perch bottom trawls and would not for long withstand conditions encountered in bottom trawling.

Modifications which will result in being able to tow the net more rapidly and at required depths are necessary before the midwater trawl can be successfully used for fishing ocean perch under conditions encountered.

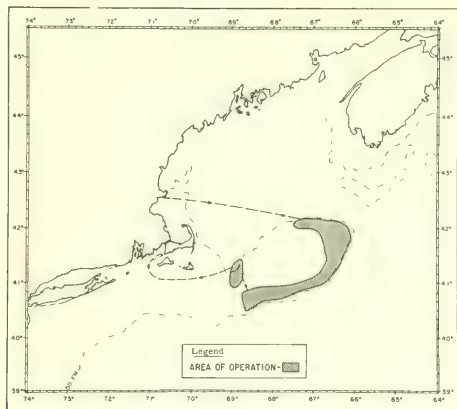
Several good tracings of herring schools occurred during the cruise but catches by the midwater trawl were small. The waters where good fish tracings occurred were generally abundant in Euphausiid shrimp. Most catches included at least $\frac{1}{2}$ to 20 pounds of these small crustaceans and many of the tracings made by the echo-sounder were attributed to them.



North Atlantic Fisheries Investigations

DISTRIBUTION AND ABUNDANCE OF SEA SCALLOPS ON GEORGES BANK STUDIED:

M/V "Delaware" Cruise 62-6 (May 26-June 6, 1962): To collect data on the distribution and abundance of sea scallops on Georges Bank for comparison with similar data collected previously was the purpose of this



Sea scallop survey on Georges Bank by the research vessel Delaware, May 28-June 8, 1962.

cruise by the research vessel Delaware of the U. S. Bureau of Commercial Fisheries. Live scallops and clapper shells caught with a 10-foot standard dredge with a 2-inch ring bag were measured from 163 stations. A total of 184 10-minute tows were made. Also, 5 additional 5-minute tows were made at designated stations with a 30-inch Digby dredge with a $\frac{1}{2}$ -inch mesh liner. Special collection of meat samples and shell samples were brought back to the laboratory for detailed study. Live scallops were returned to the laboratory and placed in specially designed tanks for aging and spawning studies. Hydrographic information was collected at each station and at hourly intervals while steaming. This 10-day cruise ended on June 6.

Note: See Commercial Fisheries Review, July 1961 p. 25.



North Pacific Exploratory Fishery Program

MARINE FAUNA OFF COLUMBIA RIVER TO BE SAMPLED:

In order to sample fauna and bottom substrate in the region southwest of the mouth of the Columbia River at depths of 50 to 1,000 fathoms, the Bureau of Commercial Fisheries, in cooperation with the Atomic Energy Commission, has chartered the University of Washington research vessel M/V Commando. The vessel left Seattle, May 14, 1962, and will return June 15, 1962.

The area of operation will be south of the Astoria Canyon and west-southwest of Tillamook Head, Oregon, in 50 to 1,000 fathoms of water.

Primary purposes of the cruise are: (1) to monitor stations established during previous cruises for distribution and abundance of demersal fishes and invertebrates; (2) collect samples of the fauna for analysis by the University of Washington, Laboratory of Radiation Biology; and (3) to conduct experimental trawling at depths greater than 600 fathoms.

Electronic navigational equipment will be used as aids in locating stations and trawlable bottom. A standard otter trawl will be used to depths of approximately 500 fathoms, and a Gulf shrimp trawl will be employed in deeper areas. A Van Veen bottom grab will be used to sample the substrate for invertebrates at various stations.



Oceanography

FIRST FOLIO OF NORTH ATLANTIC MARINE ENVIRONMENT SERIAL ATLAS:

The first folio of an unusual atlas project designed to aid the work of oceanographers and other scientists dealing with the sea was published in May by the American Geographical Society.

The project--a Serial Atlas of the North Atlantic Marine Environment--was begun two years ago by the Society in cooperation with other scientific institutions, following a two-year preparation period. The atlas is of a type never before attempted in this country--an effort to present a picture of the sea as a whole. It is to be published like a journal, in separate folios. Each folio will consist of a map or series of maps constituting a study of a particular aspect of the ocean, whether physical, biological, chemical, or geological.

In time, oceanographers should have a comprehensive range of studies in all disciplines. The atlas will thus provide simultaneously a medium for the publication of rapidly accumulating information about the sea and a guide for future research.

The first of the atlas folios, a study of sea surface temperatures in the western North

Atlantic, is the work of a meteorologist with the U. S. Bureau of Commercial Fisheries. It consists of 55 maps, 12 of which analyze a great volume of observations collected by commercial vessels at sea. The other 43 maps are interpretive. They show how the material can bring out detailed, month-to-month patterns of difference in the sea surface temperature. The study is expected to be a valuable contribution to environmental research.

Other folios in preparation include a study of the distribution of more than 130 species of fish off Georges Bank; a study of sea temperature at a depth of 656 feet; and a study of Spisula polynyma, a species of clam.

The atlas project is financially supported by a grant from the National Science Foundation, and by industrial companies and individuals. Cooperating institutions include the Royal Society of Canada, the Food and Agriculture Organization, U. S. Fish and Wildlife Service, the Woods Hole Oceanographic Institution, and the International Council for the Exploration of the Sea.

Note: See Commercial Fisheries Review, April 1962 p. 23.



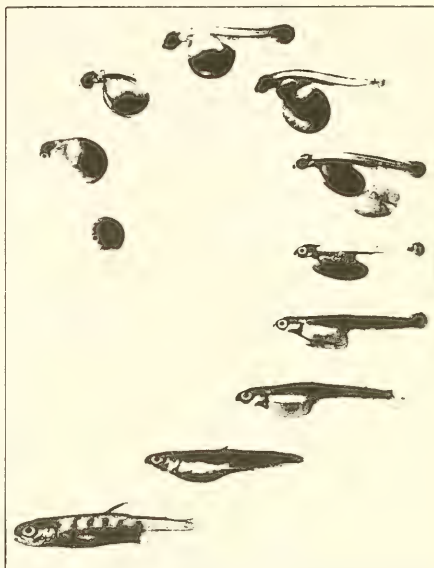
Oregon

SILVER SALMON FRY RELEASED IN LUCKIAMUTE RIVER:

The release by the Oregon Fish Commission of 105,000 silver salmon fry this spring into the waters of the upper Luckiamute River near Valsetz was announced on May 9 by the State's Fisheries Director. The liberation followed the removal earlier in the year of an old splash dam that had long kept from production several miles of prime spawning gravel in the upper reaches of the stream.

The dam was constructed in 1903 to facilitate removal of logs from the woods with the now-outmoded "splashing" technique wherein logs were periodically flushed downstream from a collection point behind the structure. Building of the Valley and Siletz Railroad rendered the dam obsolete. It remained across the stream, however, and during the nearly 40 years since it was last used, a monumental mass of debris had built up behind the structure. The barrier measured some 300 feet in length and was as much as 20 feet deep in places.

After a concerted attack on the dam and the jam behind it, a Fish Commission crew succeeded in breaching the barrier, and the stream began flowing in its normal channel for the first time in 60 years.



Stages of development of silver salmon (Oncorhynchus kisutch) from eyed egg to feeding fingerling. Approximately twice normal size.

Many miles of once-productive spawning stream have been taken out of use by poor logging practices and other land-use activities conducted without due consideration for maintaining good stream conditions. The Luckiamute project is part of the Fish Commission's efforts to restore salmon and steelhead production to the fullest extent possible in Oregon's remaining anadromous fish spawning areas.

The young fish will stay in fresh water for approximately one year, then migrate to the ocean. The fall of 1963 will see some of the early returning jacks back up the river, but most of the fish surviving the rigors of ocean life and the two-way river migration will come back as spawners in the fall of 1964.

Pollution

RESISTANCE OF FISH TO REFINERY WASTES TO BE STUDIED:

A study on the life history, behavior, and methods of handling fish to measure their resistance to refinery wastes will be conducted by a professor of zoology, Oklahoma State University, Stillwater. This was one of a total of 40 research grants (totaling \$647,000) made to 40 college and university scientists by the U. S. Public Health Service's Division of Water Supply and Pollution Control in a continuing effort to find better technological ways to purify the Nation's water sources and supply.

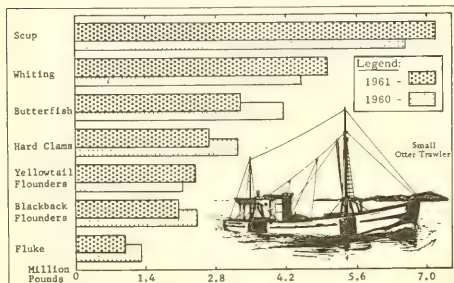
Another grant to an assistant professor of oceanography, Cornell University, Ithaca, is for a study of the processes involved in the distribution of oxygen in coastal waters. Continued growth and urbanization of coastal regions has resulted in a mounting utilization of tidal waters for dispersal and oxidation of organic pollutants. Serious oxygen depletion with a marked accumulation of decaying organic matter in the water occurs in many heavily polluted estuaries, damaging fisheries and recreational uses, as well as proving a public health hazard.



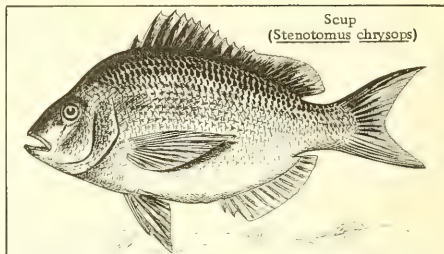
Rhode Island

FISHERY LANDINGS, 1961:

Landings of fish and shellfish at Rhode Island ports during 1961 amounted to 83.4 million pounds valued at \$3.2 million ex-vessel. Compared with 1960, this was a gain of 14.1 million pounds, but a drop of \$651,000. The catch used for food was down 10 percent, while that used for industrial



Rhode Island's landings of certain fish and shellfish, 1961-1960.



purposes, principally fish meal, was up 43 percent.

During 1961, scup led all edible items with 7.1 million pounds. Whiting was next with 5 million pounds, and butterfish third with 2.9 million pounds. Hard clams, yellowtail and blackback flounders, and fluke followed. Those seven items comprised 86 percent of the 1961 total edible production.

The majority of the 1961 production was taken by otter trawlers--51 million pounds or 61 percent of the year's total landings. Purse seines accounted for 22.7 million pounds or 27 percent, while the remaining 9.7 million pounds or 12 percent were taken by other types of gear.

Landings were highest during August with 16.5 million pounds. Fish for industrial use made up 88 percent of the August landings. June was second with 12.9 million pounds, followed by July with 12 million pounds.



Sharks

TAGGING PROGRAM ON TROPICAL PACIFIC SPECIES:

As part of its program of research on sharks, the U. S. Bureau of Commercial Fisheries Biological Laboratory, San Diego, this year started a tagging program on tropical Pacific species of sharks.

Fishermen should be on the lookout for the strap tags attached to the dorsal fin



of sharks. A reward of one dollar will be paid for the return of tags to the Laboratory with information on date and location of capture.



Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS, MAY 1962:

Item and Period	1962	1961	1960	1959	1958
.....(1,000 Lbs., Heads-Off).....					
Total landings, So. Atl. and Gulf States:					
July	-	10,477	21,746	17,493	13,457
June	-	8,220	12,427	14,547	10,241
May	5,500	5,279	6,335	6,885	6,523
Jan.-Apr.	14,200	17,453	18,013	14,080	19,333
Jan.-Dec.	-	91,280	141,035	130,660	116,552
Quantity canned, Gulf States 1/:					
July	-	3,042	6,319	3,085	4,805
June	-	3,744	7,537	7,641	5,107
May	1,600	1,316	1,591	2,680	1,462
Jan.-Apr.	944	345	712	617	540
Jan.-Dec.	-	15,760	28,594	24,679	26,404
Frozen inventories (as of end of each mo.)2/:					
July 31	-	2,671	7,077	7,062	3,832
June 30	-	19,416	15,338	19,283	10,664
May 31	-	24,696	17,540	21,137	11,013
April 30	16,147	27,492	20,502	23,331	12,211
January 31	-	31,842	34,332	30,858	17,963
Imports 3/:					
July	-	6,635	7,319	7,861	6,340
June	-	8,065	8,932	8,300	6,018
May	4/	8,278	9,902	8,264	5,666
April	10,219	9,208	7,733	9,051	5,446
Jan.-Apr.	43,383	40,825	32,531	33,282	20,594
Jan.-Dec.	-	126,268	113,418	106,555	85,393

1/Pounds of headless shrimp determined by multiplying the number of standard cases by 33.
 2/Raw headless only; excludes breaded, peeled, and deveined, etc.
 3/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.
 4/Not available.
 Note: Data for 1962 and 1961 are preliminary. May 1962 data estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.



Sport Fishing

SKIN DIVERS TAKE MARINE FISH CENSUS:

Salt-water fish along all coasts of the United States were tallied in an underwater census, the Department of the Interior announced. The census, known as the Memorial Day Fish Count, began May 26, 1962, and lasted through June 3. It consisted of identifying, counting, and recording salt-water fish by 70 census teams in 16 coastal states. The teams varied from 3 to 15 persons and included men, women, and teenagers.

The census takers were 400 skin-diver volunteers of the American Littoral Society, an organization of amateur underwater naturalists, with headquarters at Sandy Hook, N. J. The program is coordinated by the Sandy Hook Marine Laboratory of the U. S. Fish and Wildlife Service's Bureau of Sport Fisheries and Wildlife.



Sandy Hook Marine Laboratory and a local American Littoral Society team cooperated in a New Jersey coast survey.

Divers listed as many of the United States marine fish as they could find during the nine-day period. In a pilot study held last summer, 24 test teams counted 23,000 fish of 93 species. These ranged from one-inch long angelfish to twelve-foot tiger sharks.

The American Littoral Society seeks to encourage underwater study of shore life by direct observation of fish and other marine animals, assist members in solving problems of a scientific nature, foster public information about shore life and public awareness of needs for conservation action, and act as "eyes" for marine scientists.

For years, marine biologists have been troubled over their inability to make simultaneous observations of the distribution and abundance of fish over their entire range, which, in some cases, may be thousands of miles along the coast. The planned fish counts will help fill this gap and answer such questions as where migratory fish come from, where they go, and where their centers of abundance are. Further study of the data collected during the census is expected to give some clues on why fish distribution and abundance are patterned the way they are.

The Director of the U. S. Bureau of Sport Fisheries and Wildlife hailed the skin divers' efforts as "a fine example of the growing interest of our people in conservation activities."

The present fish count will be followed by two others later in the year—one on the Fourth of July and another on Labor Day.



Storm Damage

ATLANTIC COAST AREA DAMAGED BY HIGH TIDES:

High tides and strong winds hit a large portion of the Atlantic Coast March 6-8, 1962, and caused much damage to property and some damage to shellfish resources in coastal bays. Some Bureau facilities were damaged. Several fishing vessels were lost at sea, and con-

tour shifts along the coast caused many navigation problems. The coastal areas of North Carolina, Virginia, Maryland, Delaware, New Jersey, and New York all suffered some damage from the storm. The damage to fishing vessels, equipment, docking facilities, and shore plants was not as heavy as had been reported immediately after the storm. But the full effect of the storm on shellfish resources, like oysters and clams, will not be known for some time.

The U. S. Interior Department's special task force on Atlantic Coast storm damage made an aerial survey on March 28 of the hard-hit beaches of New York, New Jersey, Delaware, and Maryland. The task force continued its aerial reconnaissance the next day over the Virginia and North Carolina coasts. The Coast Guard furnished the aircraft and crew.

Governors of all six States cooperated in the study. The Department launched the study at the request of Chairman Clinton P. Anderson of the Senate Committee on Interior and Insular Affairs Committee. The New Mexico Senator said the Federal study was needed to help States plan for future protection of their coastal areas, and to save some of their beach areas under public ownership.

Losses due to the storm to Interior Department installations were estimated at more than \$3.5 million. Virtual loss of two National Wildlife Refuges in Virginia and North Carolina and serious damage to nine other refuges resulted. Loss was assessed at approximately \$2 million. Some damage also was suffered by the Department's fishery laboratory at Franklin City, Va. Restoration of all areas is under way.

Fish and Wildlife Service officials said that the sport and commercial varieties of finfish did not suffer serious loss from the storm. Concern was felt regarding shellfish resources because of extensive silting, but no extensive damage was reported by the shellfish industry as of early April 1962.

The Coast and Geodetic Survey, U. S. Department of Commerce, in mid-March mobilized a special land-sea-air task force to begin a resurvey of the storm-ravaged Atlantic coastline from Long Island to South Carolina. Work to re-map the coastline with new aerial photography was begun on March 13. Preliminary examination of this photo-

graphy confirmed the belief that existing charts are now obsolete in areas of radical shoreline change.

The Coast and Geodetic Survey has given high priority to updating its charts, particularly in those areas of ship channels and marine commerce. A series of little "chartlets" have been issued. These are intended to supplement existing nautical charts until new chart editions can be issued later this year. But basic hydrographic surveys will also be ordered for most of the affected states to learn what has happened to channel depths and the ocean floor.

Reports indicate that the photography revealed some very prominent alterations in the shoreline complex. The Hatteras photos, for example, show new inlets connecting the Atlantic Ocean and Pamlico Sound. Much of the land around Ocracoke Island is gone, and definite changes have been noted in the barrier islands along the Virginia-Maryland shoreline.

The most significant changes were delineated in the 18 "chartlets" to supplement regular Coast and Geodetic Survey nautical charts. Eight of these areas were given top priority. They are: Ocean City, Md.; Absecon Inlet, N. J.; Beaufort Inlet, N. C.; Cape Fear, N. C.; Lookout Bight, N. C.; Little Egg Harbor Entrance, N. J.; Chincoteague, Va.; and Ocracoke, N. C.

Oceanographers of the Survey believe that when the ocean completely "settles down" and the sand begins to adjust to a new level, that further changes will be apparent in the shoreline. This process, they say, may take a year or so, and a survey of selected coastal areas will be required again at that time.

In Maryland there was some damage to the fisheries and beach resorts. Ocean City in Maryland was extremely hard hit. The majority of the Maryland fishing fleet came through without too much damage, except for one vessel which was washed ashore on Assateague Island (the captain and one crew member were drowned). Two other vessels engaged in the cod long-line fishery were sunk at the dock, but were quickly raised for repairs.

Fishing communities along the Maryland portion of Chincoteague Bay were hampered by high waters. A packing plant at George Island Landing was about demolished with

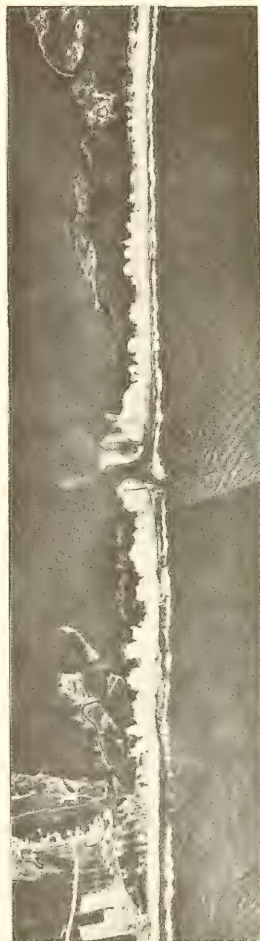
CAPE HATTERAS, NORTH CAROLINA



↑
Shoreline moved 300 ft.

↑
Shoreline moved 300 ft.
— New shoreline from photographs of March 13, 1962.
- - - Limits of sand deposited by storm.
- - - New shoal limits.

Date of Photography - October 10, 1958



Date of Photography - March 13, 1962

\$25,000 damage. Other plants along the Bay were flooded and equipment was water damaged.

In Chincoteague, Va., all 11 of the oyster-packing houses were water-logged and damaged. A large number of the boats used in dredging oysters were gone. The loss in production before things returned to normal and costs of repairs were estimated at a conservative \$500,000. Other oyster sections hard hit were Greenbackville, Va., and George Island Landing and Taylor's Landing in Maryland. In the latter port 7 or 8 packinghouses were closed after the storm for some time. The storm hit almost at the peak of the oyster season in the Virginia and Maryland areas. Shucking and shipments were stopped for several weeks by health authorities because of the danger of pollution. Some of the public oyster grounds in the area were covered by sand; the same was true for private oyster grounds in the Northampton and Accomack counties area.

In the Hampton Roads area of Virginia, the biggest loss was in pond nets and equipment. Some nets and the supporting poles were swept away entirely. All others were damaged to some degree. The largest pond nets were located off Buckroe Beach and Grandview. Some of the pond nets were repaired, but others were discarded as not worth repairing. Crab-picking plants in the area were idle for more than a week after the storm because of the lack of crabs. Most dockside facilities were under water for several days and some damage was reported to those facilities.



Turtles

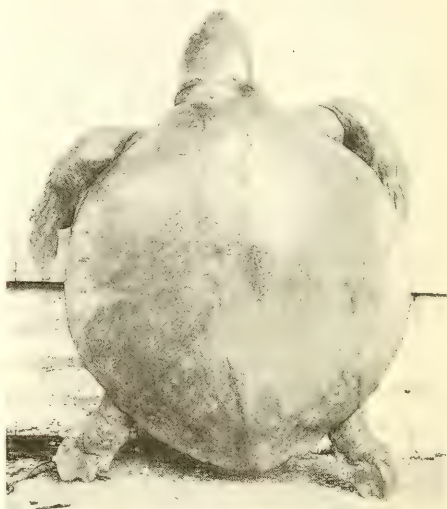
UNITED STATES NAVY PLANTS GREEN TURTLES IN CARIBBEAN:

Between 20,000-30,000 green sea turtle hatchlings were deposited throughout the Caribbean Ocean area in September 1961 by a United States Navy seaplane.

The objective is to replenish the rapidly-diminishing population of green turtles (*Chelonia mydas*), which has been the main source of meat for natives of the area for centuries. At the same time, the Navy will study the migration habits of the green turtle, which is considered to have superior navigational abilities the same as the salmon.

The planting operation was a cooperative venture of the Navy and the Caribbean Conservation Commission (CCC), a non-profit institution, and was under the direction of a professor of the University of Florida, Gainesville, who is also the director of the contract research project from the Office of Naval Research (ONR).

The freshly-hatched turtles were transported in plastic bags by a Navy Grumman seaplane from the green turtle hatchery operated by the CCC at Tortuguero, Costa Rica, about 50 miles north of Limon, one of the few areas in the Caribbean where green turtles are still plentiful. The baby turtles were flown to British Honduras; Cartagena, Colombia; Barbados, Grenada, and St. Lucia in the Windward Islands; Antigua and St. Kitts in the Leeward Islands.



Full grown green sea turtle.

The operation is based on the theory that green turtles return to their spawning grounds three years later to lay their eggs, similar to the return of the salmon to spawn. It is hoped that by transplanting the baby green turtles just after they have been hatched, the turtles will accept their new location as their spawning ground and return there to lay their eggs rather than to

Tortuguero where they were hatched. If the turtles return to the various places in the Caribbean where they were planted, then natives of those areas will be provided eventually with an abundant supply of meat for the first time in many years, solving a critical problem of protein deficiency.

Scientific research will be served by obtaining knowledge of whether turtles use certain clues to navigate for distances up to thousands of miles out to sea and back to the place from where they first enter the sea or whether they use other clues to return to the place where they were hatched. ONR has also under consideration a research study to determine how baby green turtles, which are spawned far inland and usually behind dunes, unerringly find their way to the sea which they have never seen. This would throw more light on their navigation mechanisms.

The Navy also plans to develop a system of marking baby green turtles, which are about the size of a half-dollar, so that as they grow to their huge adult size they can be located and identified periodically throughout their migration period.

ONR's study of green turtles is part of a broad, long-range program in biological orientation through which the Navy hopes to improve its navigation and long-range detection devices by learning how birds and marine animals can navigate with remarkable accuracy over long distances to reach destinations over routes they have never traveled before.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, MARCH 1962:

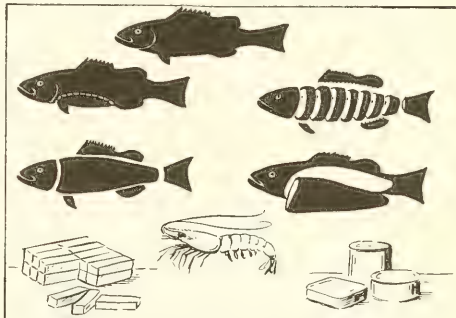
Imports of fresh, frozen, and processed edible fish and shellfish into the United States in March 1962 were up 22.4 percent in quantity and 15.6 percent in value as compared with the previous month. During that period there were greater imports of cod fillets, haddock fillets, swordfish, canned salmon, frozen and canned tuna, canned sardines, canned spiny lobster, and frozen sea scallops. But imports were down for frozen shrimp, frozen frog legs, ocean perch fillets, fillet blocks and slabs, and sea catfish fillets.

Compared with the same month in 1961, the imports in March 1962 were up 22.8 percent in quantity and 20.2 percent in value. This March there were more imports of frozen cod and flounder fillets, sea catfish fillets from West Germany, canned salmon (from Canada and Japan), frozen tuna (from Japan, Ecuador, Peru), canned tuna (from Japan), canned sardines, and frozen scallops from Canada. Imports dropped off for frozen haddock fillets, blocks and slabs, canned crab meat

U. S. Imports and Exports of Edible Fishery Products, March 1962 with Comparisons								
Item	QUANTITY				VALUE			
	Mar. 1962	Jan.-Mar. 1961	Mar. 1962	Jan.-Mar. 1961	Mar. 1962	Jan.-Mar. 1961	Mar. 1962	Jan.-Mar. 1961
Imports:	.. (Millions of Lbs.) ..				.. (Millions of \$) ..			
Fish & Shellfish: Fresh, frozen, & processed 1/ ..	102.9	83.8	275.9	251.7	33.3	27.7	94.3	80.9
Exports:								
Fish & Shellfish: processed only 1/ (excluding fresh & frozen)	3.7	1.7	10.1	8.6	1.3	1.0	4.0	4.0
1/ Includes pastes, sauces, clam chowder and juice, and other specialties.								

(from Japan), spiny lobster tails (from South Africa), shrimp (from Mexico), and frozen frog legs (from Cuba).

In the first three months of 1962, imports were up 9.6 percent in quantity and 16.6 percent in value as compared to the same period in 1961. The greater increase in value was because of the higher prices which prevailed the first part of this year for nearly all imported fishery products. This year there were more imports of blocks and slabs, sea catfish fillets, canned salmon (from Japan and Canada), frozen tuna (mostly from Japan and Peru), canned tuna (from Japan), canned sardines, frozen shrimp, and frozen scallops.



United States exports of processed fish and shellfish in March 1962 were up 117.6 percent in quantity and 30.0 percent in value as compared with March 1961. The increase was due to greater exports this March of canned mackerel, salmon, sardines not in oil, and squid (principally to Greece). Because of the scarcity on the United States market, exports were down for frozen shrimp, canned shrimp, and canned oysters.

Compared with the previous month, the exports in March 1962 were up 27.6 percent in quantity, but the value was the same. The lower-priced products like canned mackerel and squid were exported in greater amounts in March, with some increase in the exports of frozen and canned salmon and canned sardines. Exports of frozen and canned shrimp, and canned oysters dropped in March.

Processed fish and shellfish exports for the first three months of 1962 were up 17.4 percent in quantity, but the value was the same as in the same period of 1961. The following products were exported in substantially greater quantities in 1962: canned mackerel, frozen salmon, and canned squid; but exports dropped for canned sardines not in oil, canned shrimp, and canned oysters. Since most of the increase in exports January-March this year was in the lower-priced products, there was no change in value.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

United States imports of tuna canned in brine during January 1-June 2, 1962, amounted to 22,325,162 pounds (about 1,063,100 std. cases), according to data compiled by the Bureau of Customs. This was 11.4 percent more than the 20,035,659 pounds (about 954,100 std. cases) imported during January 1-June 3, 1961.

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1962 at the 12½-percent rate of duty is limited to 59,059,014 pounds (about 2,812,000 std. cases of 48 7-oz. cans). Any imports in excess of the quota are dutiable at 25 percent ad valorem.



U. S. Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED, APRIL 1962:

During April 1962, a total of 39 vessels of 5 net tons and over were issued first documents as fishing craft, as compared with 35 in April 1961. There were 22 documents cancelled for fishing vessels in April 1962 as compared with 25 in April 1961.

Area (Home Port)	April		Jan.-Apr.		Total
	1962	1961	1962	1961	
.....(Number).....					
<u>Issued first documents 2/</u>					
New England	6	2	9	11	33
Middle Atlantic	-	-	1	1	12
Chesapeake	5	9	12	21	75
South Atlantic	3	1	10	12	44
Gulf	3	7	28	34	103
Pacific	22	15	37	38	149
Great Lakes	-	1	-	4	12
Puerto Rico	-	-	-	2	2
Total	39	35	97	123	430
<u>Removed from documentation 3/</u>					
New England	2	-	8	5	20
Middle Atlantic	4	2	19	12	32
Chesapeake	2	2	5	16	28
South Atlantic	1	-	15	8	29
Gulf	5	10	34	40	104
Pacific	8	8	50	34	111
Great Lakes	-	3	8	7	17
Hawaii	-	-	3	-	-
Total	22	25	142	122	341
1/ For explanation of footnotes, see table 2.					

1/ For explanation of footnotes, see table 2.

Gross Tonnage	Issued 2/	Cancelled 3/
.....(Number).....		
5-9	6	6
10-19	22	8
20-29	4	-
30-39	1	1
40-49	-	1
60-69	1	3
70-79	2	-
80-89	-	1
100-109	1	-
110-119	1	1
210-219	1	-
450-459	-	1
Total	39	22

1/ Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.
2/ Includes redocumented vessels previously removed from records. Vessels issued first documents as fishing craft were built: 29 in 1962, 3 in 1961, 5 prior to 1951, and 2 unknown. Assigned to areas on the basis of their home ports.
3/ Includes vessels reported lost, abandoned, forfeited, sold alien, etc.
Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U.S. Treasury Department.



Vessels

NEW RESEARCH VESSEL LAUNCHED FOR FISH AND WILDLIFE SERVICE:

Albatross IV, the new oceanographic vessel of the Fish and Wildlife Service's Bureau of Commercial Fisheries, has been launched by the Southern Shipbuilding Corporation at Sidel, La., the Department of the Interior reported on May 23, 1962. Finishing of the interior and installation of additional machinery and equipment are under way and delivery of the \$1,773,948 vessel is scheduled for September 1962.

Albatross IV was designed by Dwight S. Simpson and Associates, naval architects and marine engineers of Boston, Mass., to meet requirements of fishery scientists of the Bureau. The craft is a 187-foot single-screw stern trawler, the first stern trawler to be built in the United States. It is equipped with a ramp to haul loaded nets aboard, permitting exploratory and experimental fishing during heavy weather. The Albatross IV is powered by twin Diesel engines, has a controllable pitch propeller, and is designed to travel at 12 knots with a range of 9,000 miles. The vessel is reinforced against ice and is air-conditioned to enable its use for general fishery and oceanographic research in any navigable waters in the world--in all seasons--in all reasonable conditions of weather and temperature.

Comfortable quarters and mess space are provided for a maximum crew of 26, plus 15 scientific personnel. Complete laboratory and research facilities are also provided, including wet and dry laboratories; photographic and electronics laboratories, an aft open deck laboratory for handling fish immediately after catch; a bow engine for steering and maneuvering on station; a steerable nozzle rudder,



Albatross IV launching on April 19 at Slidell, La.

designed for holding position during research work; underwater sonar equipment; underwater television and closed-circuit television aboard ship; and an underwater electromagnetic log.

Albatross IV carries on the traditional name of major fishery research vessels of the United States. Albatross I was a 234-foot, twin-screw iron steamer, commissioned in 1882, which visited both coasts of the United States, Alaska, South and Central America, the Galapagos Islands, the Hawaiian Islands, Japan, the tropical Pacific Islands, and the Philippine Islands during her 39 years of service that ended in 1921. Her successor, Albatross II, was a 148-foot, former Navy tug that operated from 1926 to 1932, engaging in research and explorations on mackerel and haddock fisheries and preliminary experiments with "savings" gear.

Albatross III was acquired from the General Seafoods Corporation in 1939 for \$1. She was originally the *Harvard*, a steam-driven trawler built in 1926. While awaiting reconversion to a research vessel, World War II started and she was drafted by the Navy, transferred to the Coast Guard, renamed the *C.G.C. Bellefonte*, and was rebuilt as an Atlantic patrol vessel. She was returned to the Fish and Wildlife Service in 1944, was reconverted in 1947 to a research vessel along the lines of the Boston otter trawlers, and was commissioned March 19, 1948.

Albatross III represented the first blending of efficient fish and scientific skills, and her career included such accomplishments as an over-all census of commercial fishes on the New England banks, experiments on refrigeration of fish at sea, development of "savings" gear, effects of waste-acid disposal off New York, and the location and charting of wrecks and other obstacles destructive to the nets and gear of New England commercial fishermen. She was deactivated in 1959 due to age and high cost of maintenance.

Albatross IV will be carrying on the fishery and oceanographic research vital to the Nation's commercial fisheries and oceanographic programs--to help the domestic fishing industry in the quest for the three billion additional pounds of fish the Nation will be consuming annually 20 years hence; and to conduct various phases of oceanographic research, such as the Bureau's Tropical Atlantic Fishery Investigations program beginning in January 1963. This program has just been adopted as an international program by the Intergovernmental Oceanographic Commission of UNESCO in Paris, France.

New dock facilities at the Bureau of Commercial Fisheries Woods Hole, Mass. Biological Laboratory will be the home port of Albatross IV.



Virginia

STUDY OF EFFECTS OF INDUSTRIAL HOT WATER DISCHARGES ON MARINE ENVIRONMENT:

The effects of thermal (heated) effluents discharged into the marine system by industries using river water for cooling and processing will be determined by a comprehensive scientific investigation now being initiated at the Virginia Institute of Marine Science. Formulation of the project, which is to be supported by a recently-approved \$11,711 research grant from the U. S. Public Health Service, was announced by the Institute on May 16.

The study would measure the response of selected marine plants and animals to elevated temperatures caused by the release of heated water into streams. Heated water might produce a thermal barrier which would interfere with the normal upstream and downstream migrations of important fish species, particularly during spawning seasons, and possibly have a direct effect upon succeeding populations of those species. Elevated temperatures may also effect the food chain present in marine waters.

The study is deemed important in the light of rapid industrialization and community growth in coastal areas. While these trends are vital to the progress of the Commonwealth of Virginia, their effects upon the marine system must be measured. Results of this investigation will thereby aid in the realization of continued maximum utilization of valuable marine resources.



Washington

ANOTHER SALMON FISH FARM GOES INTO PRODUCTION:

The Washington State Department of Fisheries on May 15 announced that Whitman's Cove in Case Inlet, Pierce County, was planted on May 1 with 250,000 young chinook salmon. This is the 28th salmon fish farm in the Department of Fisheries' continuing effort to produce more salmon for all fishermen. The chinook, about 365 to the pound, weighed around 719 pounds. They had been converted to salt water at the Department's Hoodsport Hatchery.

The installation includes an electric screen, a control structure for bringing in sea water for circulation, two 52-inch pipes for inlet and outlet, and a boat-hauling ramp. Total cost was just under \$200,000, making it the most expensive of any of the fish farms established so far in the State.



Wholesale Prices, May 1962

More liberal landings of haddock at Boston accounted for the 28.3 percent drop in fresh large drawn haddock prices from April to May. But those prices were still 9.1 percent higher than in the same month a year earlier. Seasonally heavier landings of fresh-water fish in the Great Lakes area caused whitefish and yellow pike prices in May to drop 16.5 percent below April prices. But with landings light and demand good, fresh salmon prices in May were up 15.9 percent from April and were also 13.7 percent higher than a year earlier. With the arrival on the market of halibut from this sea-

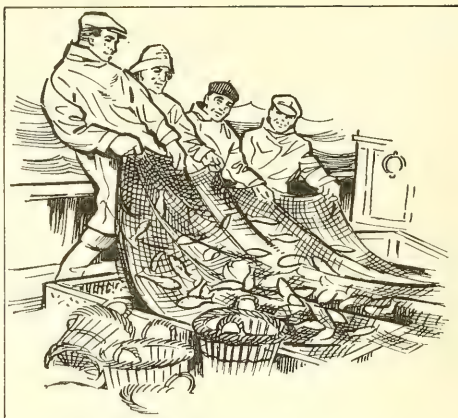


Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, May 1962 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes 2/ (1957-59=100)			
			May 1962	Apr. 1962	May 1962	Apr. 1962	Mar. 1962	May 1961
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					119.4	118.9	120.3	103.6
Fresh & Frozen Fishery Products:					118.1	117.2	119.4	101.0
Drawn, Dressed, or Whole Finfish:					119.9	119.1	121.8	106.6
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.08	.12	65.7	91.6	124.0	60.2
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.41	.45	122.2	133.1	116.8	103.0
Salmon, king, le. & med., drsd., fresh or froz.	New York	lb.	1.00	.86	139.7	120.5	120.5	122.9
Whitefish, L., Superior, drawn, fresh	Chicago	lb.	.71	.85	106.0	126.9	111.9	98.5
Yellow pike, L., Michigan & Huron, rnd., fresh	New York	lb.	.71	.85	116.3	139.2	120.4	117.1
Processed, Fresh (Fish & Shellfish):					119.7	120.4	123.2	101.7
Fillers, haddock, sm., skins on, 20-lb. tins.	Boston	lb.	.33	.38	80.1	91.1	121.4	70.4
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	1.02	.99	119.6	116.0	117.2	89.7
Oysters, shucked, standards	Norfolk	gal.	7.50	7.75	126.5	130.7	130.7	122.2
Processed, Frozen (Fish & Shellfish):					110.2	108.0	109.0	88.1
Fillers: Flounder, skinless, 1-lb. pk.	Boston	lb.	.40	.40	100.1	100.1	100.1	97.6
Haddock, sm., skins on, 1-lb. pkg.	Boston	lb.	.33	.33	96.7	96.7	101.1	93.8
Ocean perch, lge., skins on 1-lb. pk.	Boston	lb.	.32	.33	110.4	115.7	119.2	101.6
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.99	.95	116.8	112.7	112.1	81.2
Canned Fishery Products:					122.1	122.1	122.1	110.5
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	28.50	28.50	124.2	124.2	124.2	122.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	12.15	12.15	107.9	107.9	107.9	97.7
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	5.25	5.25	118.5	118.5	118.5	101.5
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	12.81	12.81	164.3	164.3	164.3	112.2

1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/ Beginning with January 1962 indexes, the reference base of 1947-49=100 was superseded by the new reference base of 1957-59=100.

3/ Recomputed to be comparable to 1957-59=100 base indexes.

son's catch, prices for the fresh and frozen product were down 8.2 percent from April to May, but were still 18.6 percent higher than in May 1961. With the higher fresh salmon prices offsetting the lower prices in the other products under the drawn, dressed, or whole finfish subgroup, the index for the subgroup rose 0.7 percent from April to May and was 12.5 percent higher than in May 1961.

Except for fresh shrimp at New York City, May prices of fresh haddock fillets at Boston were down 12.1 percent and shucked oyster prices at Norfolk were down 3.2 percent from April. With landings light and demand good, May shrimp prices at New York City were up 3.1 percent from April and they were up 33.3 percent from the same month in 1961. The processed fresh fish and shellfish subgroup index, principally because of higher shrimp prices, rose 0.6 percent from April to May and was 17.7 percent higher than a year earlier.

From April to May prices for frozen fillets of flounder and haddock remained steady, but ocean perch fillet prices dropped 4.6 percent because of heavier landings of ocean perch in New England ports. With stocks still at a low level, frozen shrimp prices at Chicago in May were 3.6 percent higher than in April and 43.8 percent higher than in May 1961.

All frozen fillets this May were priced higher than in the same month of 1961. Because the higher shrimp prices more than offset the lower ocean perch fillet prices, the processed frozen fish and shellfish index rose 2.0 percent from April to May and was 25.1 percent higher than in the same month of 1961. Frozen fishery products continued to move well in May. Markets were reported steady for most of the major products.

Canned fishery products prices remained at the same level from February through May. But the index for the subgroup this May was 10.5 percent higher than a year earlier. Compared to May 1961, prices this May were up 1.8 percent for canned pink salmon, up 10.4 percent for canned tuna, up 16.7 percent for California sardines, and up 46.4 percent for Maine sardines. The canned tuna pack this year was only slightly ahead of last year at the end of May, but less light meat and more white meat was packed the first five months of this year. A substantial drop in domestic landings of yellowfin tuna in California curtailed the pack of light meat tuna. Through May the pack of Maine sardines was still light and the available stocks had practically been sold out by the end of April. The 1961/62 season pack for California sardines was again a small one.



VACUUM FREEZE-DRYING TESTED FOR APPLICATION IN FOOD FIELD

One of the "hottest" developments in food processing today is vacuum freeze-drying, which is beginning to move from the laboratory and pilot-plant stage into tonnage production.

The process, known for many years in the United States, but until recent times limited largely to blood plasma and drugs, is catching on in a big way. Major food firms, which have been quietly testing the merits of the process, are expressing optimism for the future of vacuum freeze-dried foods.

The list of foods which have successfully been subjected to the new process is impressive. Some of the foods include: in meats: beef steaks, pork chops, ground beef, diced beef, sausage meat, chicken parts and diced chicken; in seafoods: shrimp, crab meat, crab cakes, clams, oysters, fish fillets, fish sticks, whole lobster, and lobster tails; in dairy products: whole milk, homogenized milk, goat's milk, mother's milk, whole eggs, egg albumen, and cottage cheese, and numerous fruit and vegetable products.

The vacuum freeze-drying process, also called lyophilization and sublimation, removes the moisture from foods under high vacuum conditions with only a small amount of heat. The resulting product can reportedly be stored indefinitely without refrigeration.

There is a slightly higher processing cost for freeze-drying, but proponents of the new process say that the savings in refrigeration equipment and in the low transportation cost compensate for this.

Food subjected to this process does not change shape, but takes on the consistency of a dry, brittle sponge. Sealed in a tin can, foil, or plastic pouch to keep out the moisture, such foods will keep for years at ordinary temperatures. The food is reconstituted by placing it in water for approximately 20 minutes. The sponge-like food absorbs water into the original spaces left by the evaporated ice, thus bringing the food back to nearly its original flavor and texture. (Food Field Reporter, April 24, 1961.)



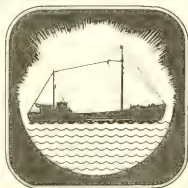
FOREIGN

International

NORTHWEST ATLANTIC FISHERIES COMMISSION

STANDING COMMITTEE ON RESEARCH AND STATISTICS MEETS:

The Standing Committee on Research and Statistics of the International Northwest Atlantic Fisheries Commission met in Moscow May 24-June 9, 1962. This meeting preceded the 12th Meeting of the Commission (June 4-9).



INTERNATIONAL NORTHWEST PACIFIC FISHERIES COMMISSION

JAPAN-SOVIET FISHERY NEGOTIATIONS DEADLOCKED ON SALMON REGULATORY AREA ISSUE:

Talks at the sixth annual meeting of the Japan-Soviet Northwest Pacific Fisheries Commission, in session in Moscow as of mid-April 1962, deadlocked over the problem of expanding the salmon fishing regulatory area. Japanese delegate Takasaki met with Soviet representative Ishkov, according to a translation from the Japanese periodical Sankei Shimbun of April 12, 1962.

During three lengthy meetings Takasaki had with Ishkov, which lasted from 3 to 5 hours, Takasaki had endeavored to persuade the Soviet Union to modify its attitude. The Japanese delegation led by Takasaki was determined not to yield to the Soviet demand to expand the regulatory area to include waters south of 45° N. latitude, even if it meant sacrificing the salmon catch.

* * * * *

JAPANESE SEND TOP OFFICIAL TO MOSCOW IN ATTEMPT TO BREAK DEADLOCKED FISHERY TALKS:

In an effort to break the deadlock at the sixth Northwest Pacific Fisheries Commis-

sion meeting (Japan-U.S.S.R.) in Moscow, Japanese Agriculture and Forestry Minister Kono, accompanied by the presidents of two of the largest fishing companies as advisors, left Tokyo on May 1, 1962, for Moscow. At Moscow, Minister Kono met Premier Khrushchev, Deputy Premier Mikoyan, and Fisheries Chief Ishkov. The Minister hoped to break the deadlocked negotiations by offering to fix the annual Japanese total salmon catch, within Treaty waters, at 60,000 metric tons, reports the Japanese periodical Suisan Keizai Shimbun of May 1 and 2, 1962.

Prior to his departure, Minister Kono held a meeting on April 30 with Foreign Minister Kosaka, State Minister Miki, and Fisheries Agency Director Ito to confer on the final position Japan should take in pursuing the negotiations. As a result, a decision was reached to: (1) oppose any Soviet attempt to extend the regulatory area south of 45° N. latitude; (2) give Minister Kono full authority to deal with the problems related to catch regulation and fishing area restrictions; and (3) assume a flexible attitude toward the matter of applying stricter control over the catch outside Treaty waters, for the Soviet Union was likely to apply much pressure on this problem. The Soviet Union's attitude was expected to harden, particularly since the Japanese Government had authorized salmon fishing in the unrestricted waters south of the Treaty area, according to the Japanese periodical.

The Japanese proposal to limit Japan's catch within Treaty waters to 60,000 metric tons is reported to be the lowest of all offers made by Japan in the past six years. At the 1961 negotiations, Japan had proposed a catch limit of 80,000 metric tons, which was the previous lowest offer. (Editor's note: Japan finally settled for a catch quota of 65,000 metric tons in 1961.)

The decision to make the low 60,000-ton offer was based on the fact that the 1962 salmon season is expected to be a poor year, according to Russian and Japanese scientists,

International (Contd.):

and Japan wants to seek an early settlement without haggling over catch quotas. Also, by reducing the Japanese salmon fleet operating in the Treaty waters by 10 percent and by voluntarily seeking to regulate the catch in the non-Treaty waters (instead of being pressed by the Soviet Union to accept a low quota as in years past), Japan hoped to seize the initiative at the fisheries negotiations and eliminate the mutual distrust existing between the Soviet Union and Japan. However, Japan does not even intend to compromise the catch quota to anything less than 60,000 tons, according to Minister Kono, who hoped to reach an agreement with the Soviet leaders in about two weeks, the Japanese periodical points out.

* * * * *

JAPANESE AND SOVIETS REACH AGREEMENT ON NORTH PACIFIC SALMON AREAS AND CATCH QUOTAS:

The sixth annual meeting of the International Northwest Pacific Fisheries Commission (Japan-U.S.S.R.) was formally concluded on May 12, 1962. The meeting was held in Moscow. By the terms of this year's agreement, Japan and the Soviet Union agreed to establish two areas, to be referred to as Area A and Area B. Area A includes the waters to the north of 45° N. latitude (present treaty waters) and Area B the waters to the south of 45° N. latitude. The following regulations will apply to the two areas in 1962:

Catch: Area A - 55,000 metric tons; Area B - 60,000 metric tons. The quota for Area A is 10,000 tons less than in 1961.

Fishing Season: Area A - For mothership-type operations, season will commence May 15 and end August 10. For land-based gill-net fishery, season will open on June 21 and close August 10. Area B - For land-based gill-net and long-line fishery, season will commence April 30 and close June 30.

Fishing Gear: Area A - Catcher vessels assigned to the mothership fishery will employ gill nets with knot-to-knot mesh sizes of 60 millimeters (about 2.4 inches or more, of which over 50 percent must consist of nets with knot-to-knot meshes of 65 mm. (about 2.6 inches). In 1963, over 60 percent of the gear must be 65-mm. mesh nets. Use of long-line gear will be prohibited. Area B - Length of gill nets to be fished by any one vessel will be reduced from 15 kilometers (9 miles) to 12 kilometers (7.2 miles) in 1963. Gill nets with knot-to-knot mesh sizes of over 55 millimeters (about 2.2 inches) will be used. Long lines with ganging lines of over 0.522 mm. (0.02 inch) in diameter will be employed.

Japan and the Soviet Union agreed that regulatory measures for Area B will be enforced by Japan in 1962, but the Soviet Union reserves the right to place observers on Japanese patrol vessels. Enforcement in Area B will henceforth be regulated under Article VII of the Russo-Japanese Fisheries Treaty and methods of enforcing regulations in Area B in 1963 will be subject to the approval of the Northwest Pacific Fisheries Commission.

Japan and the Soviet Union also agreed that the catch quota for Area B in 1963 may be raised up to 10 percent from this year's 60,000-ton quota, in accordance with recommendations submitted by the fisheries scientists of the two governments. Catch quota for Area B in 1964 will be negotiated at the seventh annual meeting of the Commission in 1963. Catch quota of Area A in 1963 will be subject to negotiations at the same meeting. (Nippon Suisan Shimbun, May 9 & 11; Ship Suisan Shimbun, May 14, 1962.)

Editor's Note: Up to this year Area B (waters south of 45° N. latitude) had been under the unilateral jurisdiction of Japan and catch quotas were established unilaterally by Japan. Area A (waters north of 45° N. latitude) was the only area under the joint control of Japan and Russia prior to this year. The Japanese started fishing in Area B on April 30 even though agreement with Russia had not been reached on that date. In Area A fishing started on May 15.

Final agreement was reached outside the Commission meetings by Japanese Agriculture and Forestry Minister Kono (who went to Moscow early in May accompanied by the presidents of two of the largest fishing companies as advisors) and Soviet Fisheries Chief Iskhov.

The Soviet Union and Japan on April 12 reached agreement on the 1962 Northwest Pacific king crab production quota, according to translations from the Japanese periodicals Suisan Tsushin (April 14 & 16) and Suisan Keizai Shimbun (April 15, 1962).

The total production quota was set at 315,000 cases of 6.5-oz. cans. Converted to Japanese case size, this amounts to 630,000 cases of 48 No. 2 or 6.5-oz. cans. Of the total, the Soviet Union's share is 189,000 cases (equivalent to 378,000 Japanese cases) and Japan's share 126,000 cases (equivalent to 252,000 Japanese cases). This year's quota for the Soviet Union is 3 percent less than the quota of 195,000 cases in 1961, and for Japan it is also 3 percent less than the 130,000 cases in 1961.

The Soviet Union will operate six king crab fleets; Japan four fleets. Fishing regulations covering fishing areas, fishing period, and gear restrictions are the same as in 1961. In accepting the lower quota this year, the Japanese side stipulated that they were not acknowledging that the crab stocks in the Kamchatka area were in a state of decline.

Japan will operate the factoryships Yoko Maru (5,764 gross tons), Kaiyo Maru (5,500 gross tons), Hakuyo Maru (6,430 gross tons), and Seiyo Maru (6,054 gross tons). All four factoryships departed for the fishing grounds in the Okhotsk Sea by April 16.

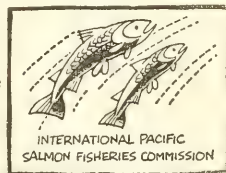
Crab fishing by the Japanese and Soviets in the North Pacific is regulated in terms of the canned crab meat pack. This type of fishing was unrestricted in 1957, but beginning with 1958 there have been restrictions imposed. Japan's quota has been progressively reduced, with this year's quota 21 percent smaller than the 1958 quota.

Note: See Commercial Fisheries Review, May 1962 pp. 42 and 60; March 1962 p. 32; February 1962 pp. 50 and 82; January 1962 p. 43; July 1961 pp. 40 and 75; August 1961 p. 47; October 1961 pp. 41 and 43.

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

SOCKEYE AND PINK SALMON STUDIES

The Sweltzer Creek Field Station being built for the International Pacific Salmon Fisheries Commission by the Canadian Government was in partial operation as of late May 1962. The laboratories will not be fully staffed or equipped with the required automatic temperature controls until this fall at which time a public inspection will be arranged. Some exploratory experiments already are in operation to aid in



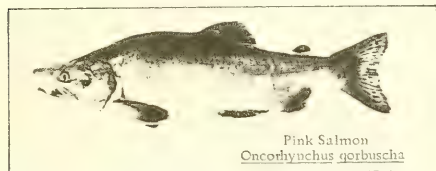
International (Contd.):

designing a full scale investigation into the cause of: (1) the relation of Fraser River flow to the adult survival of sockeye salmon; (2) the relation of temperature and salinity in Georgia Strait to the adult survival of pink salmon.

The State of Washington has indicated that salt-water facilities may be made available to the Commission at their Bowman's Bay Station near Anacortes. These facilities will be of considerable value in the study of sockeye yearlings and pink salmon fry during the period of estuarial interchange.

The downstream migration of sockeye smolts from Chilko Lake is almost complete for 1962 with a record number of 39 million fish estimated through mid-May. Trapping gear operated at Mission, B. C., revealed that the Chilko migrants reached Mission (a distance of 300 miles) in 3 to 5 days. This downstream migration rate is faster than previously believed possible. Studies will now be undertaken to determine the effect of delaying the entry of experimental groups of Chilko migrants into salt water by the time required to pass through a theoretical reservoir such as that which would be created by Moran Dam.

The artificial spawning channel at Seton Creek, in operation for the first time in the fall of 1961, received 6,711 pink salmon or 11 percent of the total pink salmon escape-



Pink Salmon
Oncorhynchus gorbuscha

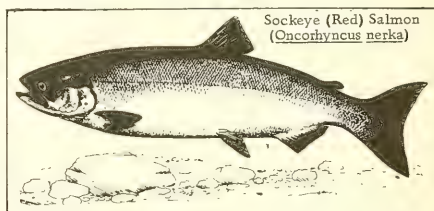
ment to Seton Creek. Spawning was 98 percent effective which demonstrated the suitability of the channel for natural spawning. The suitability of natural spawning grounds is generally indicated by the success of egg deposition. Of the total of 6,723,000 eggs estimated to have been naturally deposited in the channel, 52 percent or 3,550,000 survived to healthy fry on the basis of final counts. The total capacity of the channel is 10,000 fish and this capacity should be fully utilized when the run returns in 1963. The success of this and other properly designed

artificial spawning channels is fully justifying this method as a limited substitute for natural spawning grounds. The increasing adult return to the Jones Creek Channel near Hope, B.C., indicates that the fry produced by this method have a normal survival rate to maturity.

It would appear that all conditions as of May were favorable for the survival of pink salmon returning as adults in 1963. Spawning and incubation conditions were excellent. The fry hatch appeared very good considering that the 1961 escapement was below that believed necessary for a maximum run. The marine factors related to adult survival appeared to be optimum.

Extensive observations on the distribution and growth of sockeye fingerlings and pink salmon fry are being carried out between the mouth of the Fraser River and Race Rocks. Complete environmental records are being accumulated as a basis for extensive laboratory work to be conducted as the necessary facilities are made available. A substantial increase in the number of pink salmon fingerlings over the number present in 1960 is quite obvious throughout the Gulf and San Juan Island areas.

Two sources of mortality occurred during the downstream migration of sockeye smolts this spring.



Sockeye (Red) Salmon
Oncorhynchus nerka

Failure on the part of the Seton Creek power plant to maintain full load during the downstream migration of sockeye from Seton Lake resulted in a serious loss of migrants. When the power plant is on full load the measured mortality is less than 10 percent. When the plant is on partial load as it was during the peak of this year's migration, the mortality can be very serious. During the downstream migration in the previous cycle year a similar part-load plant operation was associated with a 62 percent decline in the returning adult sockeye run. It may be expected as a result of this year's mortality from the power tur-

International (Contd.):

bines that a further decline will be evident in the Seton Creek sockeye run returning in 1964.

The first available evidence indicated that the dead fish floating in the Lower Fraser during late April and early May 1962 originated at the Seton Creek power plant. Later it was found that the fish killed at Seton Creek were sinking to the bottom of the river and the floating fish were of Chilko Lake origin. The cause of death of the Chilko fish observed has not yet been assessed, but present indications are that natural conditions may be responsible. No artificial factor has been located to date and pathological studies are continuing on the specimens collected. The exact extent of the Chilko mortality is not known but based on the test catches of healthy Chilko fish at Mission it is not believed to be a significant part of the record migration of 39 million fish.

* * * * *

THREE NATIONS STUDYING NORTH PACIFIC SALMON MIGRATIONS:

One of the greatest cooperative fishery investigations ever attempted is providing answers to questions about the Pacific salmon that have gone unanswered since research into the species began.

Scientists of Canada, the United States, and Japan are now in the seventh year of a program formulated by the International North Pacific Fisheries Commission to find out exactly where the salmon live between the times they leave their native rivers and return there to spawn. The big question is whether salmon from North America intermingle with salmon from Asia and, if so, whether another line than the provisional eastward limit of Japanese salmon fishing at 175° W. could be shown to divide the salmon from the two continents more equitably.

Six full years of detective work have shown that intermingling does take place, but that the salmon don't get lost. Inevitably, when the time comes, the North American salmon head eastward and the Asian salmon westward to spawn in the fresh waters where they originated.

The distribution of salmon throughout the North Pacific Ocean and the Bering Sea is very broad, and the vastness and complexity

of this distribution combine to create a gigantic puzzle. However, the scientists have found out that the intermingling in the Aleutian area, for instance, takes place over more than 25 degrees of longitude, with salmon crossing the provisional line in both directions in large numbers.

A comprehensive joint report is expected to be made by the Commission in the next two years.

The methods used by the biologists in tracing the movements of salmon in the high seas are varied. Research vessels fish in many locations and their results, as well as the results of the commercial fisheries, are closely studied to determine the origin of the fish caught. Origins can be traced by the recovery of tagged or fin-clipped fish which have been intercepted on their way to sea, and also by foreign bodies carried by fish, which vary from area to area of the two continents. It has also been discovered that scale patterns on Asian fish differ from those of North American fish. (Canada's Department of Fisheries Trade News, April 1962.)

EUROPECHE

NEW ORGANIZATION MADE UP OF EUROPEAN FISH PRODUCERS' ORGANIZATIONS:

The various professional national organizations of fish producers in the European Economic Community (EEC) have formed an organization named "EUROPECHE." The new organization came into being on May 4, in Brussels, Belgium.

The aims of "EUROPECHE" are: (1) To reach a common viewpoint in connection with the fishery problems resulting from the coming into force of the EEC or from the development of the EEC. (2) To make known to the EEC organizations the Organization's common viewpoints, whether asked for by those organizations or not.

Note: Also see Commercial Fisheries Review, May 1962 p. 52.

EUROPEAN ECONOMIC COMMUNITY

SECOND ACCELERATION IN TIMETABLE FOR ESTABLISHMENT OF CUSTOMS UNION:

The Council of Ministers of the European Economic Community (EEC) on May 14, 1962, approved a second acceleration in the timetable for the establishment of the Community's customs union.

International (Contd.):

On July 1, 1962, import duties on products moving in intra-EEC trade will be reduced by another 10 percent for industrial products and by another 5 percent for liberalized agricultural products (those not subject to intra-EEC quotas).

However, duties on non-liberalized agricultural products and on items included in the Common Agricultural Policy for which variable levies will become effective on July 1, 1962, will not be further reduced on that date.

The establishment of a customs union is one of the main objectives of the EEC.

During the transitional period, which is now likely to end earlier than 1970, as provided for in the Rome Treaty, member states are gradually reducing their internal tariffs and are adapting their external tariffs to the rates of the Common External Tariff (CXT).

At the end of this process, each of the member states will levy identical duties on goods imported from non-member countries and will admit goods from other EEC countries free of customs duties.

With this second acceleration, import duties on products moving in intra-EEC trade will have been reduced by a total of 50 percent for industrial products and 35 percent for agricultural products. The next reduction of internal duties is to take place July 1, 1963, and will be an additional 10 percent for all products, bringing the total reduction in internal duties on industrial products to 60 percent.

The Council said the second movement in aligning the external duties toward the CXT is also to be accelerated.

On July 1, 1963--the date when internal duty reductions will reach the 60 percent mark--member states again will adjust their external duties, by 30 percent of the difference between their individual base rates and the CXT.

Originally, this second movement was not to have taken place until December 31, 1965.

The third external adjustment--the final adjustment which will put the CXT rates in-

to full effect--must take place at the end of the third stage of the transitional period, which is likely to end before the date of January 1, 1970, provided in the Rome Treaty. (Foreign Commerce Weekly, May 21, 1962.)

EUROPEAN TRADE FAIRS

UNITED STATES FOOD-PROCESSING INDUSTRY INVITED TO SELL AT TRADE FAIRS:

The United States food-processing industry has been invited to place its products on sale in United States Government food exhibits at leading European trade fairs this year and to join in a program to increase export sales of processed and packaged foods.

The "test-selling" food exhibits, sponsored by the Department of Agriculture, have been successful on an experimental scale in the past two years at food fairs in England, France, and the Federal Republic of Germany.

The first of these fairs to be held this year will be the Manchester Grocers Exhibition at Manchester, England, May 8-19. Others will be at London, England, August 28-September 12; Munich, Germany, September 21-30; and Brussels, Belgium, October 20-November 4.

At the United States Food Fair in Hamburg, Germany, last fall, demand for packaged, precooked, and frozen foods was the heaviest yet experienced.

In addition to a "superette" stocked with American convenience foods, the Hamburg Fair featured commercial exhibits by German firms handling United States products.

These exhibitors estimated that wholesale orders taken at the fair for future delivery amounted to nearly \$250,000, and Hamburg merchants plan a follow-up promotion of United States foods this spring.

Participation in the 1962 food exhibits is open to all United States food processors whose products originate in the United States. There will be no charge for display space, but the processor will be responsible for delivery of his products to the exhibit at his own expense.

For the Manchester Grocers Exhibition, the Department of Agriculture is preparing a market promotion exhibit to occupy about 23,000 square feet of floor space, much of which will be devoted to a self-service market where food items furnished by United States processors will be sold.

In addition to the self-service sales area, the exhibit will include displays and kitchen and demonstration areas for major United States agricultural export commodities arranged in cooperation with trade and producer organizations.

The exhibit will also include a trade lounge and a program of promotional events designed to bring together United States businessmen and British food wholesalers, chain store buyers, and other trade representatives.

The Manchester Grocers Exhibition, northern England's top grocery and provision show, is arranged by the trade and brings in distributors and chain store buyers from all over the British Isles.

Manchester is the hub of a metropolitan area containing nearly 2,500,000 people and 750,000 households.

United States food processors can obtain details about the 1962 program by writing to the Grocery Manufacturers of America, Inc., 205 East 42nd Street, New York 17, N.Y., which is coordinating arrangements as a service to the Department of Agriculture. (Foreign Commerce Weekly, U. S. Department of Commerce, April 16, 1962.)

International (Contd.):

OCEANOGRAPHY

INDIAN OCEAN EXPEDITION:

With 18 delegates from six countries in attendance, the First Southeast Regional Conference of the Indian Ocean Oceanographic Expedition convened in Lourenco Marques, Mozambique, April 30-May 3, 1962. The Conference was organized by the Special Committee for Oceanographic Research (SCOR) under the sponsorship of UNESCO and with the cooperation of the International Council of Scientific Unions. Captain (USNR) Robert G. Snider is the Coordinator of the entire Indian Ocean Expedition and was Chairman of the Conference. Other delegates were from Portugal, South Africa, the Malagasy Republic, France, Great Britain, and the United States.

According to Captain Snider, the Indian Ocean Expedition will be an undertaking without precedent in the history of oceanography and will represent the first attempt to study scientifically an ocean in its totality. Its purpose is to obtain new data on the Indian Ocean which will permit more accurate weather forecasting, the charting of more economical navigation routes, the location of specific fishing areas, the compilation of new hydrographic charts, the discovery of additional sea currents, the exploitation of the mineral wealth of the Indian Ocean, and a greater understanding of complex wind patterns. It is hoped that the collected information will lead also to an eventual improvement in the diet and health standards of the various peoples living along the Indian Ocean littoral who together comprise about one-quarter of the world's population. It is expected that the many projects making up the complete Expedition will not be terminated before mid-1965.

For purposes of the Expedition, the area of the Indian Ocean (14 percent of the earth's surface) has been divided into six regional zones. More than 40 hydrographic and other vessels of diverse nationalities will take part in the three-year program. Several hundred scientists from 35 countries will be assigned tasks among the various separate projects and the entire Expedition is expected to cost between \$13 and \$19 million.

At the Lourenco Marques Conference, an effort was made to coordinate into a common plan the participation of those countries mak-

ing up or having interests in the Southeastern Zone, i.e., Portugal, South Africa, the Malagasy Republic, Great Britain, and France. The United States will also take part in this Zone's activities. Altogether, 16 vessels will be used to carry out the work of the Expedition in the Southeastern Zone--8 from the United States, 2 from Great Britain, 2 from South Africa, 2 from the Malagasy Republic, 1 from Portugal, and 1 from France. Portugal, through the Mozambique Naval Command, will make available to UNESCO the hydrographic ship Almirante Lacerda which will carry out extensive cruises along the Mozambique and Malagache coasts and throughout the Mozambique Channel as far south as Durban. (United States Consulate, Lourenco-Marques, report of May 1, 1962.)

* * * * *

LATIN AMERICA OCEANOGRAPHY AND MARINE RESEARCH:

Four important meetings concerning oceanography and marine research development in Latin America were held in Chile the latter part of 1961. They were the Latin-American Seminar of Oceanographic Studies; the 2nd Latin-American Symposium on Plankton; the Meeting of Directors of Latin-American Laboratories; and a Regional Training Course on Marine Biology. The meetings were organized by the UNESCO Science Cooperation Office for Latin America, jointly with the University of Concepcion in the case of the first two meetings and with the University of Chile in the case of the latter two.

A total of 37 Latin-American scientists participated, from Mexico, Colombia, Venezuela, Brazil, Uruguay, Argentina, Chile, Peru, and Ecuador. There was an observer from the National Science Foundation (United States), the Stazione Zoologica di Napoli (Italy), the chief of the Federal Republic of Germany's Technical Assistance Program to Chile.

For the Regional Training Course, the professors were scientists from Mexico, Chile, Uruguay, Argentina, and Brazil, and the students were from Latin-American countries.

The main purpose of the meetings was to make an evaluation of the present status of research in marine sciences in Latin America in the light of what has been accomplished. Accordingly, a series of reports covering the different disciplines of marine science were

International (Contd.):

requested from, and submitted by, leading scientists of Latin America. It was also felt that some decision should be taken so as to increase existing knowledge through research and training, primarily on a cooperative regional basis.

Among the most outstanding resolutions and recommendations adopted were the following.

(1) Creation of a Latin-American Council on Oceanography, with an elected steering committee composed of leading marine scientists from Mexico, Venezuela, Uruguay, Argentina, Chile, and Brazil. This council should become a permanent Latin American Council once the necessary official steps are taken throughout all the Latin-American countries; the secretariat will be located at the UNESCO Science Cooperation Office for Latin America, Montevideo, Uruguay.

(2) Establishment of research programs on a regional, coordinated basis. Seven projects were presented, and necessary measures are now being taken for the coordination of some of these by the existing marine biology laboratories and oceanographic institutes, with the help of the hydrographic naval services.

(3) Publication of a "Latin-American Directory of Oceanographic Institutions and Scientists" so as to implement the exchange of scientists, students, information, and material, with the UNESCO Science Cooperation Office acting as a clearinghouse.

(4) The unification and standardization of methods and equipment in marine research.

(5) Organization by UNESCO, in 1962, of a 2 months' training course in physical oceanography. The Oceanographic Institute of the University of Oriente (Venezuela) offered to act as host, and the Brazilian Navy offered its oceanographic vessel, the *Almirante Saldanha*, for a training cruise to complement the course.

(6) Organization by UNESCO, in 1962, of a regional symposium on the biogeography of marine organisms for the purpose of studying the geographical distribution of such organisms and the effects upon them of the physicochemical condition and dynamics of water masses. The National Museum

of Natural History "Bernardino Rivadavia" of Argentina officially offered to act as host upon the occasion of its 160th anniversary.

(7) Organization by UNESCO, in 1962, of a meeting of deans of science faculties of Latin-American universities for the purpose of raising scholastic standards for the education of marine scientists through the reorganization and modification of curricula and plans of study.

UNESCO's Science Cooperation Office is preparing to implement recommendations 5, 6, and 7 by building up the bibliographic reference library on marine sciences in Latin America which it has already started, with profitable results. For this purpose, each scientist present at the meeting planned to send in a contribution in his specific field. To further this program, it is requested that all scientists and institutions send two reprints of any of their publications that deal with any aspect of marine sciences in Latin America to the UNESCO Science Cooperation Office for Latin America, Montevideo, Uruguay. (*Science*, March 2, 1962.)

INTER-AMERICAN TROPICAL TUNA COMMISSION

MEETING FOR 1962:

The 1962 meeting of the Inter-American Tropical Tuna Commission convened May 16, 1962, in Quito, Ecuador. All member countries (United States, Ecuador, Panama, and Costa Rica) were represented, and observers were present from Japan, El Salvador, Nicaragua, Honduras, Mexico, Guatemala, Chile, and Peru.

The principal business on the agenda was a proposal to conserve stocks of yellowfin tuna by imposing a limitation on the catch. The Commission approved an over-all quota of 83,000 short tons for the calendar year 1962 for the Eastern Pacific area extending off the coast of North and South America between Eureka, Calif., and 30° South latitude. There is a catch quota of 78,000 tons (expected to be reached in September) and an additional 5,000 tons reserved for incidental catch between September and the end of the year.

The 1963 meeting will take place in Colombia (if Colombia joins the Commission) or in San Diego, Calif. A total budget of \$624,835 was approved for fiscal year 1963/1964, of which the United States share would be \$594,985. (United States Embassy, Quito, May 17, 1962.)

Aden

FISHERIES DEPARTMENT TRYING TO DEVELOP FISHING INDUSTRY:

The plentiful fish in the waters off the Aden Protectorate's coast constitute a commercially-valuable resource which is as yet virtually untapped. The Fisheries Department, which is responsible for teaching new methods and developing the marketing and use of fish products, is rapidly approaching a stage beyond which it cannot proceed without the availability of freezer capacity and assured markets. The improvement of fishing methods, largely through use of nylon nets and purse-seining, are resulting in larger catches for what is now a limited local market.

At present, frozen fish is imported into Aden for the European residents and canned tuna caught some distance off Mukalla by foreign vessels is imported in Mukalla. As a result of this situation, the Fisheries Department is attempting to educate the European market in Aden to the quality of local fish and at the same time to cut, package, and freeze local varieties for sale in Aden and elsewhere.

Under the Protectorate Development Plan, the Cooperative and Marketing Department is planning to build a freezer in Mukalla. Whether this will be of 200- to 500-ton capacity (as a United States representative of a large tuna cannery suggested as a minimum) is not known at this time. Another United States businessman has exported some turtles to Europe, but has not as yet received permission to establish a spiny lobster industry to operate primarily in the Mukalla area.

The Fisheries Department has expanded its operations in the Federation and the Eastern Protectorate with the stationing of an Assistant Fisheries Officer at Mukalla and one at Shuqra in the Federation. During 1961 the Federation received a fishing vessel (*The Federal Star*) and the officer at Shuqra works closely with the vessel to teach new methods to the local fishermen. The arrival of this vessel has made it possible for the Fisheries Department vessel *Gulf Explorer* to devote more time to training and research off the Eastern Protectorate.

In a report on the industrial potential of the Colony and Protectorates, fisheries were cited as the most likely area of expansion. To implement the report, the Government

has stated that a permanent Working Committee on Fisheries will be established and efforts will be made to persuade London to provide more funds for fisheries development. (May 1 report from Aden.)



Angola

NEW FISHERY ENTERPRISE PLANNED:

The *Boletim Oficial* of Angola on April 18, 1962, contained a notice of the concession granted to a Metropolitan Portuguese firm. The firm was granted permission to construct a fish-processing plant, operate trawlers, and purchase the catch of other fishing vessels in the Mocamedes area. The firm is to invest 47,000 contos (approximately US\$1,645,000) in trawlers and a plant with a daily capacity of 5 to 10 metric tons of frozen fish, 10 to 20 tons of canned fish, and 100 to 150 tons of fish meal. The plant will also have a refrigerated storage capacity of 350 tons. (United States Embassy, Luanda, May 3, 1962.)



Australia

CANNED TUNA IMPORTS:

Australia's imports of canned tuna have increased rather than declined since the import tariff increase of October 1961. Consequently, a continuation of this trend, if accompanied by larger than normal domestic catches, could well lead to additional requests to the Government for protection against imports.

Australia's Canned Tuna Imports by Months, 1961 and January-February 1962	
	Lbs.
1961:	
January	60,168
February	20,117
March	43,590
April	56,143
May	36,978
June	99,027
July	47,199
August	56,523
September	21,745
October	57,546
November	35,889
December	114,474
Total 1961	651,399
1962:	
January	85,295
February	1/149,277
1/ Preliminary, subject to revision.	

On the basis of the Tariff Board Report of September 11, 1961, on "Fish in Airtight Containers," the import duty on canned tuna was increased from 1 pence to 7 pence (0.9 U.S. cent to 6.6 cents) per pound British Preferential tariff and from 3 pence to 9 pence (2.8 cents to 8.4 cents) per pound

Australia (Contd.):

Most Favored Nation tariff. The increased duties went into effect on October 26, 1961, and apply to "tuna, including fish of the suborder Scombroidei, specifically albacore, bluefin tuna, big-eyed tuna, bonito, dogtooth tuna, skipjack or striped tuna, yellowfin tuna."

The Tariff Board report follows the pattern of other reports on requests for tariff increases. These reports weigh both sides of the evidence presented, including the profitability of the industry seeking a tariff increase. In this instance the Board granted an increase, although less than the industry had requested.

A report from Sydney states that as of early 1962 there had been no marked effect so far on the market in Australia for imported tuna, mainly because of the very small catch in New South Wales during the last season. As a result of the short supply domestic producers had encountered no difficulty in disposing of their pack. A large domestic packer was also reported as having stated that his industry was more concerned at the moment with developing standards for packing and labeling than with price competition from imports. Imported Peruvian tuna is the bonito which is reported to be of lower quality as well as lower price than the Australian.

One importing firm in Melbourne reported early this year that imported Peruvian and Japanese tuna was no longer competitive in price. Another attributed the decline in sales of the imported product to the preference for the Australian product because of its higher quality rather than to a price differential. He added that Peruvian and Japanese packers had reduced their prices to offset the tariff increase. (United States Embassy, Canberra, reports of March 26 and 28, 1962.)



Brazil

"MANJUBA" OR ANCHOVY FISHERY OF SOUTHERN BRAZIL:

From October to March, during the Southern Hemisphere spring and summer, the small anadromous "manjuba" or anchovy (*Anchoviella hubbsi*) swarms from the ocean into the fresh waters of the Ribeira de Iguape River in the southern part of the highly in-

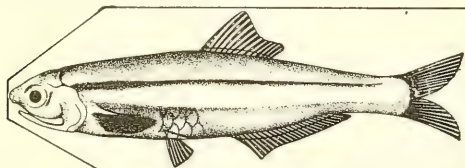


Fig. 1 - "Manjuba" or anchovy, *Anchoviella hubbsi* Hildebrand, family Engraulidae. Maximum length: 13 cm. (about 5 inches).

dustrialized state of Sao Paulo, Brazil (figs. 1 and 2). In the river, it is fished in quantities up to 1,000 metric tons a month. Fishermen use dugout canoes to set their beach seines. Each seine is over a hundred yards long, up to ten feet in depth, and with a fine mesh. At times there are over 1,000 of the nets in operation.

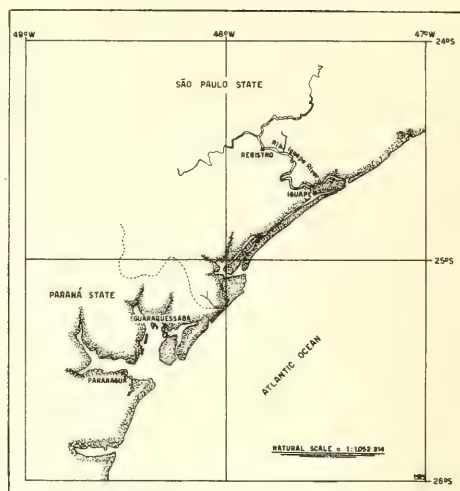


Fig. 2 - Map showing location of the "manjuba" or anchovy fishery (Ribeira de Iguape River). A similar or the same species of fish is caught at Guaraquessaba Bay, along the coast of the State of Paraná.

Some of the catch is sent fresh to the city of Sao Paulo, where there is a large Japanese colony, but most of it is salted and dried, to be consumed later by the Japanese colonies in Sao Paulo and neighboring Paraná. The salted product is very popular among the Japanese-Brazilians, since it is quite similar to the "iriko" produced in Japan.



Fig. 3 - Fishing for "manjuba" or anchovy with beach seine in Ribeira de Iguape River. Fisherman is hauling in the net.

The fishery was started in 1935 by Japanese tea growers in the area, but now only

Brazil (Contd.):

the commercial aspects are still handled by Japanese and their descendants.



Fig. 4 - State Fish and Game worker ready to interview "manjuba" fisherman at Ribeira de Iguape River.

Biological research on the species has been carried out since 1960 by Dr. Alvaro da Silva Braga and his coworkers of the "Grupo de Pesquisas sobre a Pesca Marítima do Estado de São Paulo" (São Paulo State Group on Marine Fisheries Research), whose base is in Santos, an important sea fishing port.



Fig. 5 - Measuring "manjuba" in dugout canoe to collect data for length-frequency studies.



Fig. 6 - Samples of "manjuba" catches from the Ribeira de Iguape River are analyzed in the laboratory.

Among the problems under study with the assistance of FAO, is the question of whether the "manjuba" really enter the river to spawn, since the eggs have not yet been observed. To help solve this and other aspects of the problem, a small station is maintained at Registro, with two biological assistants who continually collect data on catch, effort, size of fish caught, etc.

--Hitoshi Nomura, Fishery Biologist,
Grupo de Pesquisas sobre a Pesca Marítima,
Santos, State of São Paulo, Brazil.

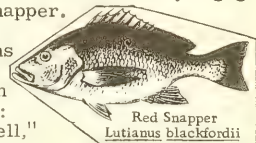


British Guiana

FISHERY TRENDS, 1961:

The fishing fleet engaged in 1961 in coastal, estuarine, and deep-sea fishing consisted of 13 schooners, 34 trawlers, and over 500 smaller vessels, many of which are powered by out-board engines. The smaller vessels operate Chinese and pin seines and carry on line fishing; the schooners are almost entirely engaged in fishing for red snapper.

There are approximately 1,200 persons engaged in the industry, and the main fishing methods are: Chinese seine, "cadell," pin seine, snapper fishing, and trawling (fish and shrimp).



Fish is distributed through the Wholesale Fish Market and Centre which is operated by the Government Marketing Division. It pro-

British Guiana (Contd.):

vides wharfage, a tractor for transporting fish, a crane for general use, facilities for preserving and hanging seines, ramp for repairing small boats, grid for repairing large boats, racks for outboard engines, repair shed for engines, water, ice, cold storage, fishermen's rest, canteen, and a covered market for wholesaling the fish.

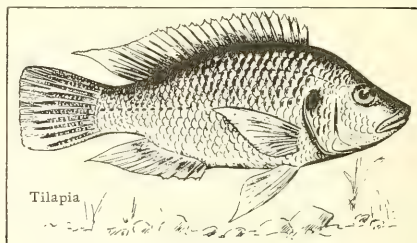
Recent developments include the use of synthetic fishing nets; introduction of brine-freezing; construction of modern fish shops in rural areas; introduction of all-purpose fishing boats; construction of modern washing tables for use in the wholesale fish market; extraction of shark-liver oil by steam and preparation of shark hides, teeth, and fins for export.

Technical assistance by the U. S. International Cooperation Administration began in March 1960. Among the programs was included the chartering of a local snapper fishing schooner to conduct an intensive fishing operation with proper equipment, including high-speed fishing reels; the organization of a commercial-type fishery training program involving the building or purchasing of a small vessel for administration and training work; the improvement and modification of existing icing, marketing, and transportation facilities; the implementation of intensive in-shore trawling and observations with local craft as well as modified local craft, including a program of cooperation with foreign shrimp and fishery firms operating in the country, to obtain information on catches and offshore fisheries; an intensive study of local and foreign private fishery potential and implementation of a program to attract foreign capital as well as local capital for production of fish meal, fresh fish for the local market, as well as fishery products for export; and to conduct a study of fish culture potential in British Guiana.

The following projects are now operating: cold storage and refrigeration; local fishing firm engaged in shrimp fishing for export purposes; and local shrimp plant engaged in processing small shrimp in formaldehyde for export (to be used as bait in sport fishing).

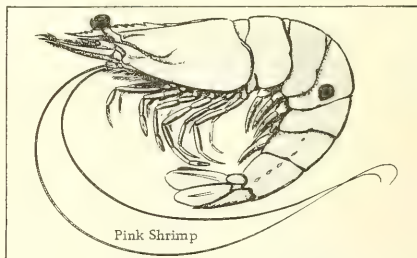
The fish culture work in British Guiana has progressed. As of early this year, over 500 ponds, varying in size from 150 square yards to 5 acres, had been established by farmers and various organizations. Most of

the ponds were stocked with tilapia distributed from the Departmental Fish Hatchery or from district demonstration ponds and the distribution of a total of 225,000 tilapia had taken place.



A brackish-water Fish Culture Station with approximately 57 acres of pond space has been established at Onverwagt, West Coast Berbice, where research work on all phases of brackish-water fish culture is being carried out.

Investigations which involve the collection of the pre-adult and larval shrimp, their identification, and the study of their growth have been carried out. Collection of pre-adult forms of about one-inch and their growth to 8 or 9 inches after a period of 7 or 8 months were observed. The shrimp grown in the ponds



have been identified as Penaeid schmitti, and P. aztecus, though specimens of P. brazilien-sis and P. duorarum have been collected in the intake waters nearby. The availability of larval pre-adult shrimp in the intake waters is considerable and they are particularly numerous in the months of April-June and October-February. Life history and growth rates have been investigated.

Further studies over the systematics of shrimp and their cultivation in brackish-water ponds; seasonal variations in catches from pin seines, Chinese seines, and long lines; and systematic work on the groupers, snappers, and skinfish.

British Guiana (Contd.):

Application has been made to the United Kingdom Pool of Fisheries Scientists for an expert to be made available for a short period to study the effects of shrimp fishing on the local fishing industry.

**British West Indies****BARBADOS FISHING INDUSTRY:**

The supply of fish in Barbados was considerably less in 1961 than in 1960. The estimated catch during 1961 was 7,420,000 pounds valued at W\$1,751,050 (US\$1.0 million). The revised estimate of the 1960 catch was 8,637,000 pounds valued at W\$2,167,800 (\$1.3 million).

Catches were normal during the first quarter of the year. During the second quarter, however, when the catch is normally heavy, very few fish were actually caught. It has now been learned that this was due to unfavorable currents which took the flyingfish out of the range of the Island's fishing launches (flyingfish usually comprise 60 percent of the total catch). Few fish were caught during the third quarter of the year which included the hurricane season (July 15 to October 15). Catches for the fourth quarter were normal and the harvest of "sea-eggs" (white sea urchins) was especially good.

During the year, 48 motorized fishing launches were added to the fishing fleet bringing the total to 468. The fleet is now almost completely motor-driven.

The Barbados Government began the construction of a W\$1.5 million (\$875,000) abattoir and fish-freezing plant during 1961. The plant, which is situated near the new Deep Water Harbor, is expected to be completed and in operation by the end of 1962. The plant will contain four frozen fish storerooms, two iced fish storerooms, one meat chilling room, one chilled meat storeroom, one ice storeroom, and two fish freezers. The plant will be able to store up to 200 long tons of frozen fish, 60 tons of iced fish, and up to 12 tons of meat. It will also be able to manufacture up to 10 tons of ice per day and will be capable of freezing 4 tons of fish per day. This plant is part of a marketing scheme for fish and will be used to stabilize the fishing industry by providing a guaranteed price for fish, even during periods of

oversupply. The fish will be frozen and distributed when the supply of fresh fish is light. (United States Consulate, Barbados, April 30, 1962.)

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ST. VINCENT FISHERY LANDINGS, 1961:

Recorded fishery landings for 1961 in St. Vincent amounted to 347,803 pounds with a retail value of \$129,349 (US\$75,349). The recorded catches were estimated to be between 40 to 50 percent of total landings since for a number of small fishing bays statistics are not collected.

During the year, \$9,150 (\$5,300) was loaned by the Government to boat owners to assist them in mechanizing their boats. It is hoped that additional loans in 1962 will help to increase the mechanized fleet. Some \$11,290 (\$6,600) was loaned to Fishermen's Associations or individual fishermen to assist them in acquiring new gear and tackle.

Some 57,700 pounds of gutted, cleaned, and iced fish were transported from the Government Fish Collecting Station on Canouan to Kingstown from August 1961 to the end of the year. This was in addition to the fish sold locally. Due to large catches by St. Vincent boats and beach seines and also to a local prejudice against iced fish, marketing met considerable difficulties in Kingstown in spite of the fact that St. Vincent imports annually about 900,000 pounds of dried salted and canned fish. The imports are equivalent to over 3 million pounds fresh landed weight, compared with local landings of possibly 700,000 pounds of fresh fish.

Note: St. Vincent is part of the Windward Islands in the West Indies.

**Canada****NYLON GILL NETS FOR COD FISHING PERFORM WELL:**

An experiment in fishing gear that is being watched very closely in Newfoundland and which looks promising involves the use of nylon gill nets for cod fishing.

Introduced in 1961 on an experimental basis by the Newfoundland Department of Fisheries, the nylon gill nets are fast winning the approval of fishermen. Loathe at first to switch from the traditional cotton net, fisher-

Canada (Contd.):

men are becoming convinced of the effectiveness of the synthetic counterpart. In time the nylon variety will be in general use. Many fishermen, using the conventional twine nets who suffered catch failures in 1961, were amazed at the success attained by others fishing the same grounds with the new nylon nets. The results they witnessed were sufficient to "sell them" on the innovation, and this year they too intend to turn to nylon.

In the 1961 experiment the Provincial Department made available to fishermen (on credit) two makes of nylon gill nets; one 27 fathoms, 20 meshes deep, with 7-inch mesh; and the other 50 fathoms, 25 meshes deep, with 7-inch mesh. Both were found to be effective. Prior to that other makes of nets were used, including Canadian nets used extensively and successfully on the Great Lakes. In the demonstration project the Federal Department of Fisheries made available the services of a technician who instructed fishermen in the hanging and fishing techniques. The gill-net instruction courses and fishing demonstrations were carried out in conjunction with provincial authorities, and successful results were achieved in many areas.

Using the synthetic net, fishermen found their work day reduced and maintenance costs of equipment were down appreciably. Leaving port at 5 a.m., a boat using nylon gill nets usually had the catch ashore by 3 or 4 p.m., whereas with trawling the work continues into late at night.

In St. Mary's Bay, on the Southern Shore of the Avalon Peninsula, where the experiment was carried out on a fairly extensive scale, fishermen set 4 to 9 nets in a fleet, depending on depth of water, nature of the bottom, and other factors. The average catch per net was 700 pounds of cod. In one day one fisherman took 8,000 pounds with a fleet of seven nets.

At St. Shotts, fishermen using nylon gill nets made daily landings while those who continued fishing with cotton nets failed to take any fish. It was also discovered that the nylon nets could be hauled in rough weather when trawl fishing was impossible.

Convinced of the merit of the nylon gill net, the Newfoundland Department of Fisheries intends to make more of them avail-

able to fishermen this year. (Trade News, April 1962, Canadian Department of Fisheries.)

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GILL-NET INSTRUCTIONS INCLUDED IN PRINCE EDWARD ISLAND FISHERMEN'S COURSES:

As part of its program to promote greater diversification of fishing techniques, the Canadian Department of Fisheries early this year supplied a gill-net instructor for fishermen's courses in Prince Edward Island held by the Province's Department of Fisheries. The instructor, a veteran Great Lakes fisherman, was engaged by the Department on a contract basis. The courses were held in eight different fishing communities.

The instructor taught fishermen the proper way to hang a gill-net, and explained the fundamentals of this fishing method. After a brief description of the method and the theory behind gill-netting, the instructor gave a practical demonstration of how to build a net. Then he "turned the needle over to the fishermen." An experienced gill-net fisherman can hang a net in about an hour and a half, and some of the more adept pupils were rapidly gaining sufficient skill to meet this mark.



Graduates of the net and gear course prepare to test their skills.

Line, webbing, corks, leads, and other materials necessary to build a gill net cost the fisherman about C\$28. The boats used by many of the Province's lobster fishermen are approximately 40 feet in length, and these can be readily adapted for gill-netting. (Canadian Department of Fisheries Trade News, April 1962.)

The attendance at the various courses was gratifying, and although younger fishermen were in the majority, several veteran fishermen expressed keen interest in gill-netting.

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Canada (Contd.):

GOVERNMENT SUPPLIES BAIT-HOLDING UNITS FOR NEWFOUNDLAND:

Eight additional bait-holding units were expected to be delivered this spring for erection in Newfoundland fishing settlements. These new units will bring to 45 the total number of distribution points being served by the Newfoundland Bait Service operated by the Federal Department of Fisheries. When the Bait Service was transferred to the Federal Government in 1949, 20 depots were in operation. However, three of the older depots have been replaced by the new units. During the last four years, 28 additional units have been erected as a means of extending the service to areas where bait was not available from private or public sources.



New refrigerated truck, which will operate out of Port aux Choix, will service bait holding units on the northwest coast of Newfoundland. Truck has a maximum load capacity of 14,700 pounds of bait.

These bait holding units which have been introduced during the last four years are capable of holding 15,000 pounds of bait and have given very satisfactory service. The units have made possible extension of the fishing season in many areas where the lack of bait had previously restricted fishing operations particularly in the early spring and again in the fall following the trap fishery. In order to keep these units supplied with frozen bait, the Department purchased two refrigerated trucks in 1959 and this year a third unit has been added.

A 164-foot vessel to replace the Bait Service Vessel *Arctica* is expected to be available for service in 1963. She will be capable of both freezing and holding bait and will have a capacity of approximately 400,000 pounds. The bait service vessel is used to transfer frozen bait from areas of surplus to areas in short supply. (Canadian Department of Fisheries Trade News, April 1962.)

**Colombia****LICENSES FOR UNITED STATES COMMERCIAL FISHING VESSELS:**

As a result of negotiations conducted by the General Manager of the American Tunaboot Association with Colombian authorities in April 1962, there has been established a procedure for United States fishing vessels to obtain licenses to fish in Colombian waters. Also, arrangements have been made for United States vessels to sell part of their catch to Colombian canners and fish merchants.

The procedure for fishermen wishing to secure licenses is new. Hitherto, only a few licenses had been granted, each application being individually considered and resolved on its particular merits. A law governing the matter and regulations thereunder have been in force for some time. However, due to some unsatisfactory experiences in the past plus the limited number of applications received, the Colombian authorities had not been prompted until now to set up a regular licensing system.



The procedure for vessels to secure fishing rights will include these steps:

1. Obtain a matricula (Registro de Embarcaciones Pesqueras) valid for 12 months and issued by the Director of Fisheries (Jefe de la Direccion de Caza y Pesca) upon payment of US\$300. To secure the matricula, the applicant must submit the following documents:
 - a. A formal application (in Spanish) written on "papel timbrado" (easily obtained in any Colombian city).
 - b. A completed matricula form (No. P.M. 500, "Registro de Embarcaciones Pesqueras").
 - c. A copy (photostat) of the Ship's Document issued by the U. S. Bureau of Customs.

These documents must be presented to the Director of Fisheries in Bogota; they cannot be accepted by Colombian consular officers abroad. However, a duly empowered agent of the interested vessel in Colombia may present them and obtain the matricula. The General Manager of the United States Association has appointed an agent in Buenaventura for the Association. He is an American citizen engaged in the fishing business in that port.

2. Obtain a fishing license issued by the Director of Fisheries upon payment of a fee of \$6.00 per net registered ton for vessels fishing off the Pacific coast or \$8.00 per net registered ton for those fishing off the Atlantic coast. The license is valid for 100 days.

Colombia (Contd.):

In the case of American Tunaboat Association vessels fishing in South American waters, the General Manager stated that they would obtain matriculas each year whether or not they fished in Colombian waters. In the event that the movement of fish brought them to Colombian waters, they would communicate with the Association's agent who would secure a license; they would then put in to pick it up.

During his talks, the General Manager of the Association gave assurances that vessels of his Association would deliver a certain part of their catch to Colombia, fish canners and merchants. Specifically, he said the delivery would consist mainly of red snapper, white fish, and undersized tuna. He stressed, however, that a reasonable price must be paid for these fish if United States vessels were to be encouraged to catch them. He said that a scale of prices suggested by a Colombian buyer seemed attractive. The proposed prices are as follows: red snapper US\$200 per metric ton (9.1 cents a pound); white fish \$190 a ton (8.6 cents a pound); undersized tuna \$140 a ton (6.4 cents a pound).

The foregoing procedures and arrangements represent a constructive step which should reduce, if not eliminate, problems such as those surrounding the recent detention of a United States tuna vessel off Buenaventura. (United States Embassy, Bogota, report of May 4, 1962.)



Denmark

FISH FILLETS AND BLOCKS AND FISHERY INDUSTRIAL PRODUCTS EXPORTS, MARCH 1962:

Denmark's exports of fresh and frozen fillets and blocks during the first three months of this year were 18.1 percent or almost 3.5 million pounds greater than in the same period of 1961. The exports of cod and related species dropped 6.3 percent, but flounder and sole fillets were up 15.9 percent and herring fillets were up 129.2 percent. During the first three months this year exports to the United States of fresh and frozen fillets and blocks of 3.4 million pounds (mostly cod and related species) were down 22.7 percent from the exports of almost 4.4 million pounds in the same period of 1961.

Denmark's exports of fresh and frozen fish fillets and blocks during March 1962 were up 30.5 percent or almost 2.4 million pounds. Of the total exports, 1.8 million pounds (mostly cod and related species) were shipped to the United States in March.



Fishing cutters in the harbor of the port of Kalundborg, one of the smaller Danish fishing ports.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks and Fishery Industrial Products, March 1962 ^{1/}				
Product	March		Jan.-Mar.	
	1962	1961	1962	1961
..... (1,000 Lbs.)				
Fillets and Blocks:				
Cod and related species	5,213	4,956	10,598	11,312
Flounder and sole	1,988	1,739	5,475	4,722
Herring	2,835	912	6,359	2,774
Other	27	102	114	238
Total	10,063	7,709	22,546	19,096
..... (Short Tons)				
Industrial Products:				
Fish meal, fish solubles, and similar products	7,242	4,741	14,074	9,923
^{1/} Shipments from the Faroe Islands and Greenland direct to foreign countries not included.				

Denmark's exports of fish meal, fish solubles, and similar products in January-March 1962 were up 41.8 percent or 4,151 tons from the same three months a year earlier.

During March 1962, Denmark exported 52.8 percent or 2,501 tons more meal, fish solubles, and similar products than in the same month of 1961. The principal buyers were the United Kingdom West Germany, and the Netherlands.

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FOURTH INTERNATIONAL FISHERIES TRADE FAIR:

The Fourth International Fisheries Trade Fair was held in Copenhagen, Denmark, from April 14 to 23, 1962. It attracted 55,000 visitors from 36 countries. There were displays by 230 exhibitors from 14 countries. Most of the products were marine engines, vessel equipment, and twine for fishing gear. Exhibits of fish processing equipment were less numerous than might have been expected. Half of the exhibitors were Danish but there also was substantial representation from the United Kingdom, West Germany, Norway, Sweden, and Japan. Six United States companies were represented, mostly through European affiliates or agents. The estimated sales turnover, based on interviews with 25 percent of the exhibitors by the arrangers, was about US\$30 million. The Fifth International Fisheries Trade Fair is tentatively scheduled for Copenhagen in 1965 and 65 percent of the exhibit area already has been booked.

The opening speech by the Danish Minister of Fisheries stressed the importance of such fairs to international trade and cooperation. The spokesman for the Danish Fisheries Council (an organization representing the various Danish fisheries associations) said that Denmark's application to join the Common Market was something which the greater part of the industry believed would be of great advantage provided, of course, that the United Kingdom, one of Denmark's biggest fish customers, also became a member. He hoped that Denmark's fishery exports to the East Bloc countries could be maintained and, preferably, expanded. But, despite Danish exports to 100 countries, he was concerned because export prices were practically the same as in 1960 and did not cover significant increases in costs in 1961 and 1962.

Unless export prices increased, difficulties were foreseen because the fishing industry had done everything possible to bring its costs down through modernization. Participation in international fairs had been successful in promoting Danish fish and fishery products but there was a need for expansion both in domestic and foreign markets, preferably through diversion of a portion of the tax on exported fishery products. (Regional Fisheries Attache, United States Embassy, Copenhagen, May 8, 1962.)



Dominica

TUNA FISHING SEASON:

Off the island of Dominica (part of the West Indies Leeward Islands), the yellowfin tuna (locally called "albacore") fishing season, which usually lasts from May to July, started unusually early this year. Tuna averaging 70 pounds each began to be caught in December 1961, and by the end of January 1962 almost 100 fish had been landed, an all-time record for that time of year for the Island.



Ecuador

PROPOSED DECREE WOULD RESTRICT FISHING BY TUNA PURSE SEINERS OFF COAST:

A decree proposed by the Ministry of Development would restrict purse seiners from fishing for tuna within 40 miles of the Ecuadorian coast between the Santa Elena Peninsula and Cabo Pasado. This action was proposed after a Government study mission returned from its investigation in Manta of complaints by fishermen that United States vessels were engaged in tuna fishing in Ecuadorian waters. (United States Embassy, Quito, report of May 4, 1962.)



Faroe Islands

BRITISH READY TO DISCUSS FISHING LIMITS WITH DANES:

The British Government has told Denmark that it is ready to discuss with them the question of fishing limits off the Faroe Islands. A British Foreign Office statement said that an aide-memoire setting out the Government's views and indicating its willingness to discuss the question was handed to the Danish Charge d'Affaires in London.

This follows a Danish aide-memoire in February 1962 concerning the future of the Anglo-Danish Agreement of 1959, under which British vessels fish in waters adjacent to the Faroes.

Under the 1959 agreement, the British Government agreed to a six-mile limit off the coast in certain areas. The agreement provides for either government to give a

year's notice of termination at any time after April 27, 1962.

The Faroese local governments have been pressing the Danish Government for some time to apply to British vessels the 12-mile fishery limit which already applies to vessels of other nationalities fishing off the Faroe Islands. (The Fishing News, April 27, 1962.)

The Danish Ministry of Foreign Affairs gave notice to the United Kingdom on April 28, 1962, of termination of the 1959 agreement on fishing limits in the Faroes. In accordance with the one year's notice provided for in the agreement, it will end on April 27, 1963.

Fishing limits of 12 miles have been recognized by the United Kingdom in Iceland and Norway.



Fiji Islands

FINAL ARRANGEMENTS FOR PROPOSED TUNA BASE:

The Japanese Diet Member who initiated the plan to establish a joint tuna base in the Fiji Islands left Japan on April 26, 1962, for the Fiji Islands to make final arrangements with the Fijian authorities to carry out his plan. In Japan, preparations for this joint venture are reported to be well under way and the application to establish this joint company was expected to be filed with the Fisheries Agency upon return to Japan of the Diet Member.

Under the present plan, Japan and Great Britain (Fiji Islands are a British possession) will each contribute 50 percent of the investment, or the equivalent of 150 million yen (US\$416,670) each. Of Japan's share of the investment, two Japanese companies are jointly investing a total of 65 million yen (\$180,556), a Japanese trading company is investing 65 million yen (\$180,556), and the South Pacific Ocean Fisheries Cooperative Association 20 million yen (\$55,556). As for investment by the Fijian side, stocks are being offered for public subscription and already 2 or 3 investors reportedly will participate in the venture. (Suisan Keizai Shim-bun, April 24, 1962.)

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Fiji Islands (Contd.):

CONSTRUCTION OF TUNA BASE:

The proposed establishment of a joint Japanese-British tuna base in the Fiji Islands, an enterprise to be managed by the South Pacific Ocean Fisheries Cooperative Association, has progressed to the stage where the base construction at Levuka was scheduled to commence on June 1, 1962. The Japanese Diver member who initiated the plan returned to Japan on May 8 from his fourth trip to the Fiji Islands. He explained the present status and prospects of the joint venture as follows:

1. Purpose of the recent trip was to make arrangements for constructing freezing facilities. The touring party included a Japanese engineer from the firm which is to handle freezer construction. Blueprints for the freezer plant have already been drawn and construction was scheduled to begin on June 1.

2. Initially, a freezer plant with a freezing capacity of 100 metric tons and a storage capacity of 2,000 tons will be built at a cost of about 500 million yen (US\$1.4 million). Construction is expected to take 10 months. Present plans call for increasing the freezing capacity by 50 tons and storage capacity by 1,000 tons next year.

3. Construction of the base was expected to start as soon as the Fijian Government approved the undertaking. Since this enterprise will contribute to the industrial growth of the Fiji Islands, the Fijian Government is showing a very cooperative attitude, having already drafted a law which would place this base in the category of protected industries. Only the provision relating to the method of determining ex-vessel fish prices remains to be included in the law. The director of the development program for the Fiji Islands was in Japan to discuss the method of determining tuna ex-vessel prices, and a general agreement has already been reached on this matter. Before returning to the Fiji Islands, the Fijian director was to study the Japanese housing loan procedures since the Japanese have asked the British bank in the Fiji Islands to extend a 200-million-yen (US\$6 million) loan for the construction of houses for the 2,000 Japanese to be assigned to the base.

4. A total of 100 Japanese fishing vessels (each of 99 gross tons) will be assigned to the Fiji Islands tuna base over a period of four years. During the first year, 30 vessels will be sent, of which 25 will be fishing vessels and 5 training vessels. Orders for these vessels have already been placed with a Japanese shipbuilding firm. Each vessel is expected to cost around 46.9 million yen (US\$130,000). Tuna landed by the vessels will be delivered to the local processing plant, where they will be frozen or canned for export to the United States. The processing plant will be jointly established with Japanese and British capital.

5. Approval for entry of Japanese families into the Fiji Islands has been obtained from the Fijian Government. The Fijian Government will grant 8-year residence permits to Japanese residing on the base, instead of 4-year permits as agreed upon originally. (Suisan Keizai Shimbun & Suisan Tsushin, May 16, 1962.)

One of the provisions in the drafted Fijian law reads: "The company which has been licensed will construct at Levuka, Fiji Islands, cold-storage and canning facilities fully capable of processing and handling the catch of the fishing fleet to be composed of at least 30 vessels." The Fisheries Agency reportedly is faced with a dilemma, for the Agency has already taken the position that it will not authorize the construction of canning plants overseas, and the Agency is reported to be reviewing this matter carefully.



France

TUNA INDUSTRY, 1961:

Production of tuna in French waters declined again in 1961, amounting to only 16,600

metric tons as compared with 17,900 in 1960 and 22,500 tons in 1959, well below the needs of the market. In addition, 5,600 tons of yellowfin tuna (including a very small quantity of "Listao") fished by French vessels in African waters were landed in French ports.

The 1960/61 winter African season was a disappointing one for French fishermen. On the one hand they had to go much farther south from Dakar to find the yellowfin tuna and on the other hand the outlets for canned tuna processed in Dakar were much smaller than had been originally expected. Only the technically more modern vessels equipped with freezing units found the season in Africa really profitable. The Senegal canning plants have a considerable amount of idle capacity and must rely principally on the protected French market where the level of tuna prices is higher than it is in other countries. An estimated 13,000 tons of tuna were reported produced during the calendar year 1961 by French vessels fishing in Africa. Of that amount, 5,600 tons were shipped to France as frozen tuna and the rest was canned in Senegal (4,160 tons of the Senegal canned pack was shipped to France).

The program set up by the French Authorities before the 1961/62 campaign in Africa started called for a total production of 22,000 tons, of which 10,000 tons were to be shipped frozen to France for the French canneries. As the French canneries were running short of tuna at the beginning of April 1962, the French Government took an exceptional decision to allow the import of 6,000 tons of raw tuna, 3,500 tons of which are destined for canneries located in France and 2,500 tons for Dakar canneries for subsequent export after processing to France. (United States Embassy, Paris, report of May 3, 1962.)

Note: See Commercial Fisheries Review, April 1962 p. 60, October 1961 p. 50.

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FROZEN TUNA IMPORTS AUTHORIZED:

France is reported to be planning on importing 5,500 metric tons of frozen tuna this year and is said to have already issued import licenses for 3,500 metric tons of frozen tuna. Until recently, France has been restricting imports of tuna, except from countries that once were part of her overseas territories, like Senegal. This recent turn of events is attributed to poor fishing by French fishermen, as well as by fishermen in those countries which normally provide tuna for the French market.

France (Contd.):

Japanese tuna export firms have approached France with offers of frozen tuna, but as of mid-May, only one firm is reported to have been successful in concluding an agreement to deliver about 200 metric tons of tuna at \$360 a ton, delivery Nantes. Since tuna fishing in the Atlantic Ocean has not been very good and since many of the Japanese export firms already have commitments to deliver tuna to Italy and Yugoslavia, French firms are not expected to be able to procure, until sometime after summer, the 3,500 tons of frozen tuna authorized for import into France.

The 3,500 tons of tuna to be imported by France is expected to come under the Common Market duty-free tuna import quota of 25,000 metric tons, but details are not available. (Suisan Tsushin, May 15, 1962.)

FISHERY TRENDS, FIRST QUARTER 1962:

Unfavorable weather conditions resulted in a serious drop in French fishery production during the first quarter of 1962. Mackerel and tuna landings were particularly light and the French canners' association is pressing the Government for an exceptional import quota for raw tuna so that a reasonable packing level can be maintained. The Government has given its agreement in principle for such a quota, but hopes to work out a barter arrangement, perhaps with the Japanese, so that French salted cod can be exchanged for the imported raw tuna. (United States Embassy, Paris, May 3, 1962.)



German Federal Republic

FISHING TRAWLERS RECRUITING MEN IN IRELAND:

Early in May 1962 advertisements appeared in Irish newspapers seeking men willing to join the crews of West German fishing trawlers.

On May 17, in Cork City, the agent of Nordsee, a German deep-sea trawling firm of Bremerhaven and Cuxhaven, interviewed men who were willing to train for work aboard the vessel. He stated that the firm needed from 50 to 60 men from Ireland to supplement the German fishing fleet which is experiencing a shortage of manpower.

The men will be trained as deck hands and they will be paid in accordance with the German collective wage agreement now in effect for crews of German deep-sea fishing vessels--the basic wage is said to be 255 deutschemark (US\$63.83) per month. In addition, the men will receive a share of the returns from the catch. The trawlers are used also as factory-ships for processing salt fish. They usually have a crew of 31 men.

Interview of applicants was expected to take place also at Waterford, Dublin, and Donegal, Ireland. (United States Consulate, Cork, May 8, 1962.)

PLASTIC CONTAINERS FOR UNLOADING FISH AT DOCKSIDE:

More than 2 years of experience has now been accumulated on the plastic fish containers used to unload fish in Bremerhaven (West Germany) fish market. During that time, it is estimated that each container, each day, has been dropped 100 times from 20 feet beside being manhandled round the market and back on the vessel. Despite this, the 600 containers which formed the initial order are still in good condition.



Fig. 1 - Plastic fish baskets or tubs are hauled on deck from the hold at a rate of 10 feet per second.

The containers will hold 150-170 pounds of fish. They are tub shaped, and have a pair of colored plastic handles. This offers a number of advantages, since they serve both as a basket for unloading and a container on the

German Federal Republic (Contd.):

market floor. The strength of the handles is such that they will withstand the sudden snatch of the winch when hauling from the fish hold and they do not break or dent when dropped or are generally misused. Furthermore, they are easily cleaned by a jet of cold water, and they do not retain bacteria.

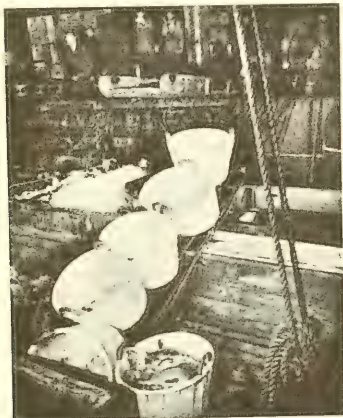


Fig. 2 - Plastic baskets come out of the auction hall in the Bremerhaven market and return to the trawler's deck via a chute.

In practice, further advantages have been found. A normal basket must inevitably increase in weight through water absorption, and this means an additional 5-9 pounds which has to be handled. When the basket is used for weighing, the tare weight must be rechecked to allow for this. The plastic tubs in use at Bremerhaven weigh 10 pounds and they will nest within one another, making transport by hand or truck simple. Tests have shown that strength is unaffected at temperatures of minus 22° F.

The material from which they are "injection-moulded" is a low pressure polythene. The Bremerhaven tub costs about US\$7.00 each. (World Fishing, May 1962.)



Ghana

JAPANESE TUNA VESSELS
DISPATCHED TO GHANA:

A Japanese fishing company is reported to have dispatched to Ghana the 239-ton ves-

sels Kuroshio Maru Nos. 70 and 71 for the purpose of conducting pole-and-line fishing. The firm is reported to be constructing three additional vessels of the same size, which are also scheduled to be based at Ghana. (Shin Suisan Shimbun Sokuho, May 8, 1962.)



Greenland

SHRIMP CANNING AND EXPORTS:

Greenland's production and export of canned tiny shrimp is controlled by the Royal Greenland Trade Department (RGTD), Copenhagen. Distribution in the United States is through a New York City fishery firm. The following information was obtained from RGTD and the President of the New York firm.

Data on Greenland's Pack of Canned Shrimp--Can Sizes, Types of Pack, Etc.			
Item	1/4-Lb. Round	1/2-Lb. Tuna	Flat Glass
Net weight	4-1/4 oz.	7-3/4 oz.	4-1/4 oz.
Drained weight . .	2-1/2 oz.	4-1/2 oz.	2-3/4 oz.
Pack	Wet	Wet	Wet
Sugar	x	-	x
Salt	x	x	x
Citric Acid . . .	x	x	x
Monosodium glutamate	x	x	-
Peeling	Machine	Machine	Hand
Fill	Throw	Throw	Hand
Label type	Paper	Litho.	Litho, top
Interior enamel . .	White	Regular	-

The 4-1/4-oz. net weight (1/4-lb. round) cans are now shipped 48 to the fiberboard carton. Formerly they were shipped 100 to a wooden box. The 7-3/4 oz. net weight (1/2-lb. tuna) cans are shipped 24 cans to a fiberboard carton. The 4-1/4-oz. net weight glass containers are shipped 12 to a corrugated carton with individual jars separated by corrugated paper. Four cartons are shipped to a master carton.

The canned shrimp are shipped to Boston and New York City by direct shipment or via Copenhagen, Denmark.

Prices to United States buyers were aimed at establishing retail prices of 33 cents and 43 cents per can for the 4-1/4-oz. and 7-3/4-oz. sizes, respectively.

The raw shrimp used were said to run 200 to 300 per kilo or 91 to 137 per pound. The 1961 pack is sold out; the 1962 canning season as of May 10 had just begun. (Regional Fisheries Attache, United States Embassy, Copenhagen, May 10, 1962.)



Guatemala

SHRIMP FISHING EXPANDING AT
PACIFIC COAST PORTS:

Shrimp fishing from Guatemala's Pacific Coast ports of San Jose and Champerico increased during the early part of 1962. In October 1961 there were only 10 vessels evenly divided between the two ports. As of early April 1962, however, there were about 25 ves-

Guatemala (Contd.):

sels operating out of each port. Also, there is a freezing plant at each port. Moreover, several of the five companies operating on the Pacific have indicated they plan to put additional boats into use.

During calendar year 1961 Guatemala exported only US\$210,000 worth of shrimp, but it is expected that, with the increased number of boats in operation, total exports of shrimp could well exceed \$2 million in 1962. In addition to the fishing activity on the Pacific Coast, one small company has operated a fishing enterprise out of Guatemala's Gulf Coast port of Matias de Galvez for some time.

During the first four months of this year, fishing activity from the port of San Jose has increased. Although the shrimp industry at San Jose has probably not given employment to more than 175 Guatemalans, it has instilled a great deal more life into that port.

One of the most promising developments in the San Jose area is the experiment of one shrimp firm in bringing its vessels across a sand bar and into the protected Chiquimulilla Canal, where docking facilities have been constructed near the company's freezing plant. If this proves practical, it will be of great benefit to the shrimp industry on the Pacific Coast.

The large amount of fish which has become available as a byproduct of shrimp fishing is having an effect on price of fish in Guatemalan markets. One shrimp company recently advertised fish at a retail price as low as 18 cents a pound whereas formerly such fish would have cost 2 or 3 times as much. The market for fish in Guatemala presently is not very large, but low prices should help develop the market. (United States Embassy, Guatemala, April 13, 1962.)

**Guinea****FISHERY TRENDS:**

The Government of Guinea has established the state company SOGUIPOL to run the state fishing fleet of eight vessels, to purchase the catch from independent fishermen, and to organize distribution and retail sales. The fleet is announced to have a weekly catch ca-

pacity of 400 metric tons which, if completely realized, would reach the target figure of 22,000 tons per year established in the Three Year Plan.

West German experts are operating a fish smoking plant, and a cold-storage plant is under construction for handling 100 tons of fish. The Poles are operating six trawlers and training crews in modern fishing practices. (United States Embassy, Conakry, April 24, 1962.)

**Honduras****SHRIMP LANDINGS DECLINE IN 1961:**

Shrimp landings in Honduras in 1961 totaled only 213,400 pounds. This was less than half of the previous year's catch and far short of the peak 1958 production of 908,600 pounds. But in 1961 a greater amount of shrimp was probably caught than is indicated by the official statistics, since according to Honduran officials the statistical system is inadequate at present.

Nevertheless, there has been a sharp downward trend in shrimp fishing activity in Honduras apparently stemming from certain provisions of the 1959 Fishing Law discouraging to foreign operators. An FAO fisheries advisor recently estimated that Honduran waters off the north coast could support a potential shrimp harvest of 2 or 3 million pounds per year. (United States Embassy, Tegucigalpa, report of May 17, 1962.)

**Iceland****FISHERIES TRENDS, APRIL 1962:**

Trawler Tie-Up: As of early May 1962, two State mediators had offered proposals for settling the nearly two-months old trawler strike. The proposals involved a 13-percent wage increase in fixed wages for seamen as well as an adjustment in their share of the catch. The Seamen's Union was expected to complete a general vote by May 7, but it was considered unlikely that they would accept the proposed terms. The strike began on March 10.

Herring Exports to Norway for Reduction: Very large herring catches off the South Coast

Iceland (Contd.):

early this year resulted in the exportation to Norway of fresh herring for reduction. This unusual arrangement aroused some criticism in Iceland because herring reduction plants on the North Coast remained idle because of lack of fish. High transportation costs to the North Coast plants is the reason advanced by the herring production management.

Frozen Fish Exporters Receive Additional Credits from United States Bank: The First National City Bank of New York has agreed to extend a US\$4 million loan to finance exports of frozen fish of the Freezing Plants Corporation (FPC) and the Federation of Icelandic Cooperatives (Samband). The loan, which was previously for \$1.5 million, is guaranteed in part by the Eximbank and will be made to the National Bank of Iceland, which will re-loan approximately 75 percent of the money to the FPC and 25 percent to Samband. (United States Embassy, Reykjavik, report of May 3, 1962.)

EXPORTS OF FISHERY PRODUCTS, 1960-61:

There was a considerable decrease in exports of frozen fish, cold liver oil, herring oil, whale oil, and ocean perch meal during 1961 from 1960, according to the Statistical

Bureau of Iceland's Statistical Bulletin, January 1962. But exports of salted fish, stockfish, fish on ice, cured and frozen herring, fish meal, and herring meal were considerably higher in 1961.

EXPORTS OF SELECTED FISHERYPRODUCTS, JANUARY-FEBRUARY 1962:

Exports of Iceland's most important commodities for January-February 1962 include several fishery items of interest to the United States fisheries. There was a considerable increase in exports of herring meal and

Selected Icelandic Fishery Exports, January-February 1962				
Product	Jan.-Feb. 1962		Jan.-Feb. 1961	
	Quantity	Value1/	Quantity	Value1/
	Metric Tons	US\$1,000 f.o.b.	Metric Tons	US\$1,000 f.o.b.
Salt herring . . .	8,844	1,921	2,555	474
Salt fish	2,249	778	3,114	1,074
Stockfish	1,719	1,034	1,913	1,031
Herring on ice . .	4,306	357	2,303	158
Other fish on ice .	7,478	867	5,315	428
Frozen fish fillets	5,829	2,202	6,620	2,364
Shrimp & lobster, frozen	32	71	55	79
Herring, frozen .	5,300	652	4,287	496
Herring, oil . . .	7,376	763	3,728	460
Fish meal	1,932	269	10,503	921
Herring meal . . .	13,196	1,899	6,276	571
Ocean perch meal	-	-	1,084	81

1/Value converted from Icelandic kronur at rate of 1 kronur equals 2.32 U. S. cents.

Icelandic Fishery Exports, 1960-61						
Product	1961			1960		
	Qty.	Value (f.o.b.)		Qty.	Value (f.o.b.)	
	Metric Tons	1,000 kr.	US\$ 1,000	Metric Tons	1,000 kr.	US\$ 1,000
Salted fish, dried	4,646	88,463	2,176	4,435	66,490	1,742
Salted fish, uncured	29,109	297,328	7,314	22,829	208,931	5,474
Wings, salted	1,324	12,313	303	631	4,346	114
Stockfish	10,674	258,751	6,365	7,434	151,878	3,979
Fish on ice	39,554	194,002	4,772	27,975	107,285	2,811
Frozen fish	44,599	694,012	17,073	64,428	797,805	20,902
Shrimp & lobster, frozen	507	41,663	1,025	484	35,209	922
Roes, frozen	607	8,472	208	721	8,977	235
Canned fish	373	22,336	549	258	15,724	412
Cod-liver oil	5,746	46,094	1,134	10,037	65,515	1,716
Roes, salted	3,082	34,839	857	2,738	28,179	738
Roes for bait, salted	1,348	8,131	200	2,259	11,990	314
Herring, cured	33,738	329,044	8,094	19,025	135,363	3,547
Herring, frozen	14,456	69,695	1,714	7,249	23,335	611
Herring oil	25,000	132,479	3,259	36,225	170,132	4,457
Ocean perch oil	981	4,919	121	2,434	14,490	380
Whale oil	1,540	11,800	290	4,423	24,957	654
Fish meal	28,693	119,105	2,930	19,223	69,219	1,814
Herring meal	36,973	203,581	5,008	23,440	90,682	2,376
Ocean perch meal	3,735	17,003	418	11,777	39,830	1,044
Whale meal	1,493	5,769	142	-	-	-
Whale meat	1,620	11,631	286	1,521	9,892	259

Note: Values converted at rate of 1 kronur equals 2.46 U.S. cents in 1961; and 2.62 U.S. cents in 1960.

Note: Values converted at rate of 1 kronur equals 2.46 U.S. cents in 1961; and 2.62 U.S. cents in 1960.

Iceland (Contd.):

salt herring as compared with January-February 1961 (see table), according to the National Bank of Iceland's March 1962 Statistical Bulletin. Exports of fish meal were very much lower.

EXPORTS OF FISHERY PRODUCTS, JANUARY-MARCH 1962:

There was a considerable increase in exports of salted herring, herring oil, and herring meal during the first quarter of 1962 as compared with the same period in 1961, ac-

HERRING SEASON GOOD:

One newspaper described this winter's herring season (October 1961-April 1962) in Iceland with 1.2 million barrels landed as the best since 1947. A far higher amount than usual has been frozen for export--18,000 metric tons, of which the U.S.S.R. bought 5,000 tons, East Germany 2,571 tons, Poland 2,500 tons, Czechoslovakia 1,500 tons, Rumania 1,500 tons, and Great Britain 157 tons.

The latest innovation is the shipment of 5,000 tons of herring under chemical preservatives to oil and meal plants in Norway. However, one small Norwegian freighter loaded with herring had to put back into an Icelandic

Icelandic Fishery Exports, January-March 1962 with Comparisons

Product	Jan.-Mar. 1962			Jan.-Mar. 1961		
	Qty.	Value f.o.b.		Qty.	Value f.o.b.	
		Metric Tons	US\$ 1,000		Metric Tons	US\$ 1,000
Salted fish, dried	934	18,318	425	1,752	33,095	987
Salted fish, uncured	3,664	45,402	1,053	2,477	24,971	654
Wings, salted	158	1,856	43	175	1,718	45
Stockfish	2,381	74,379	1,726	3,232	74,711	1,957
Herring on ice	4,742	16,499	383	2,327	6,869	180
Other fish on ice	11,554	53,159	1,233	8,094	28,305	742
Herring, frozen	9,488	48,026	1,114	5,592	27,959	733
Other frozen fish, whole	788	9,642	224	550	5,669	149
Frozen fish fillets	11,040	183,489	4,257	9,826	152,861	4,005
Shrimp and lobster, frozen	59	5,204	121	92	6,205	163
Roes, frozen	193	3,754	87	65	809	21
Canned fish	54	3,366	78	87	5,762	151
Cod-liver oil	1,121	9,920	230	1,215	9,823	257
Lumpfish roes, salted	54	754	17	22	288	8
Other roes for food, salted	127	1,600	37	629	6,371	167
Herring, salted	13,111	119,203	2,766	6,869	52,210	1,368
Herring oil	13,336	58,844	1,365	3,815	20,323	532
Ocean perch oil	15	59	1	189	1,075	28
Whale oil	388	2,558	59	-	-	-
Fish meal	4,965	30,627	711	12,205	46,351	1,214
Herring meal	14,672	90,930	2,110	7,137	28,358	743
Ocean perch meal	5	23	1	1,084	3,482	91
Wastes of fish, frozen	512	1,426	33	1,763	3,285	86
Liver meal	90	588	14	125	660	17
Lobster and shrimp meal	-	-	-	194	376	10
Whale meal	252	1,310	30	305	1,020	27
Whale meat, frozen	86	601	14	286	1,930	51

Note: Values converted at rate of 1 kronur equals 2.32 U.S. cents in first quarter 1962; and 2.62 U.S. cents in first quarter 1961.

cording to the Statistical Bureau of Iceland's Statistical Bulletin, April 1962. But exports of fish meal and ocean perch meal were considerably lower in the first quarter of 1962.

port because the cargo shifted. Another with the same problem and listing dangerously sent out an S O S. After disembarking the crew, an Icelandic Coast Guard vessel towed the freighter into port. (United States Embassy, Reykjavik, May 17, 1962.)

Iceland (Contd.):

HERRING EXPORTED TO NORWAY FOR REDUCTION:

The Icelandic Government complied with a request from fishing vessel owners to allow sales to Norway of fresh herring for reduction. Only herring caught during May off the southwest coast were allowed to be exported. In order to compensate for a rather lean winter fishing season (groundfish fisheries), which closed about mid-May, many fishing vessels planned participation in the excellent herring fisheries. More herring appeared on the southwest grounds during the winter and spring of 1962 than for many previous years. The reduction plants located in the southwest area were unable to process the large quantity of landed herring, resulting in overstockpiling and consequent deterioration of the raw material. In some instances, vessels had to wait up to a week to discharge their catches. Herring caught during spring of the year is normally of low fat content and is unfit for processing other than for reduction.

In order to solve the processing problem, an Icelandic export firm undertook negotiations with Norway. A reduction plant at Kristiansund, Norway, agreed to purchase 5,000 metric tons of herring and was willing to take more, if available, at a price of Norwegian kroner 0.15 (equivalent to Icelandic kroner 0.90) per kilogram (about US\$19 a short ton) f.o.b. Faxabai Harbor, Iceland. A Norwegian ship was expected to arrive in Iceland early in May for the first shipment. The Norwegians agreed to a minimum of 9 percent fat content herring. It was stipulated in the export permit that only herring caught during May as well as surplus which the local plants were unable to process could be exported.

The price to the Norwegians was somewhat higher than that paid by the local reduction plants. It was reported, however, that the price difference was offset by export fees and other charges undertaken by the exporter.

While the reduction plants on the southwest coast are of relatively small or medium size and are primarily geared for reduction of fish waste from freezing plants and groundfish unfit for other processing, there are large and efficient herring reduction plants on Iceland's north coast. These plants are normally in operation only during the north coast summer herring season (June-August) and idle the remainder of the year. When this export arrangement with Norway was known, many people wondered why the north coast plants were not being utilized instead. The State Herring Factories (the largest in the country) and other north coast plants announced that based on raw material prices paid by southwest coast plants, the transportation cost to the north coast was too high and would result in uneconomical processing.

With new types of fishing gear and sonars, herring fisheries in the Faxabai area have undergone drastic changes during the past 2 or 3 years. (United States Embassy, Reykjavik, May 3, 1962.)

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UTILIZATION OF FISHERY LANDINGS^{1/}, JANUARY 1962:

How Utilized	January	
	1962	1961
	. (Metric Tons) .	
<u>Herring^{2/} for:</u>		
Oil and meal	10, 195	2, 897
Freezing	2, 827	3, 537
Salting	1, 720	2, 383
<u>Groundfish^{3/} for:</u>		
Free on ice landed abroad	6, 838	3, 149
Freezing and filleting	6, 886	6, 150
Salting	2, 366	2, 379
Stockfish	1, 161	1, 569
Home consumption	811	623
Oil and meal	104	163
Total production	32, 908	22, 850
^{1/} Does not include shellfish (lobster and shrimp).		
^{2/} Whole fish.		
^{3/} Drawn fish.		

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Indonesia

JAPANESE NEGOTIATIONS TO ESTABLISH TUNA BASE CONTINUE:

The Wakayama Prefectural Fisheries Cooperative and a Japanese steel import-export firm are continuing to negotiate with the Indonesian Government to establish a tuna fishing base at Djakarta. This negotiation was first begun three years ago.

Base construction plans call for Japan to construct a cold-storage plant, a tuna canning plant, and communication and housing facilities at a total cost of US\$2.5 million (which Indonesia would repay); and assignment of Japanese fishing vessels to the base.

The negotiations, which have dragged on, reportedly face the following difficulties: (1) Equipment needed for the base are to be procured in Japan. However, the Japanese banks cannot guarantee loans for procurement of equipment. (2) The Japanese Finance Ministry and Japanese banks have not expressed firm views concerning extension of loans for this project.

The Indonesian Government has assured the Japanese firms that Indonesia will make installment payments with proceeds from sale of tuna landed at the base. The Japanese firms are negotiating with the Finance Ministry and the Economic Cooperative Fund to secure necessary funds for the construction of the base, but their responses so far have not been favorable. (Shin Suisan Shimbun, April 23; Sankei Shimbun, April 13, 1962.)



Italy

PLANS REPORTED TO RESTRICT FROZEN TUNA IMPORTS:

Reports in some Japanese quarters point out that the Italian Government is planning to curtail frozen tuna imports in an attempt to expand domestic sale of meat products, which are said to be losing their market to canned tuna. This move within the Government is reported to have originated at the time when the European Common Market established frozen tuna import regulations, permitting Italy to import free of duty 25,000 metric tons of tuna, of which Italy has allocated 14,000 tons to imports from Japan.

Japanese exporters believe that the Italian Government's plan is merely conjectural for

Italy (Contd.):

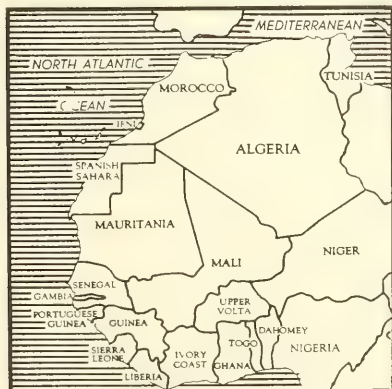
the following reasons: (1) The eating habits of Italians cannot be changed by policy changes of the Government, for the strong demand for canned tuna in Italy is due to the fact that the Italians are even greater fish eaters than the Japanese; (2) Italian canneries are only equipped to pack fish, so a switch to meat packing would involve considerable changes in facilities and canning techniques; and (3) It is unthinkable that Italy is planning to restrict tuna imports to protect its domestic industries since stock farming in that country is so small that the meat packers would have to import meat for packing purposes. (Translation from Japanese periodical Suisan Keizai Shimbun, May 2, 1962.)



Ivory Coast

JAPANESE TUNA VESSELS TO BE PLACED UNDER IVORY COAST REGISTRY:

The Japanese periodical Minato Shimbun of May 10, 1962, states that the joint company to be established in Abidjan, Ivory Coast, by a large Japanese fishing company and an Italian firm will operate with four fishing vessels, all of which will be placed under Ivory Coast registry. The bulk of their catches will be exported to France.



Establishment of the joint company in the Ivory Coast, although on a small scale, permits the Japanese company to circumvent the Common Market tariff restrictions, as well as the present high French import duty

on tuna. Reportedly, the Ivory Coast, which was a French colony for a long time and became independent in 1960, is permitted to export tuna to France without paying the high French tariff on tuna imports, and because of its relationship with France the Ivory Coast is also exempted from the Common Market tariff restrictions.

The Japanese firm and the Italian firm are each investing US\$160,000 in the joint company and 2 of the 4 vessels to be operated by the joint company will be provided by the Japanese firm. Both of the vessels are 39-ton tuna vessels, which do not require tuna fishing licenses in Japan.

Reportedly, the Japanese firm, which operates a large trawler fleet out of Las Palmas, Canary Islands, has formed another joint enterprise with the same Italian firm, and has transferred one of its trawlers to Italian registry. This move was also taken to get around the Common Market tariff restrictions. (Minato Shimbun, May 10, 1962.)



Jamaica

TUNA LANDED IN NOVEMBER-DECEMBER 1961:

During the November-December 1961 season, catches by Jamaica fishermen included albacore and yellowfin tuna ranging from 8 pounds to 50 pounds each. Also, landed at the same time were kingfish from 18 to 67 pounds each, dolphin and other pelagic fish, as well as 50 blue marlin in the Lances Bay area. All these fish were caught in the Caribbean Sea on multiple trolling lines used from outriggers. This fishing method has been taught by the Fisheries Division to fishermen in many parts of the Island of Jamaica, which is part of the Greater Antilles group of islands in the West Indies.

From April 5 to December 16, 1961, a total of 16 trips was made by the 43-foot government exploratory fishing vessel Blue Fin to the various offshore banks in the Caribbean Sea, including Pedro, Walton, Albatross, Henry Holmes, Grappler, Formigas, and New Banks. Until January 1962, the main purpose of the cruises was to train the local government fisheries personnel in the operation and maintenance of the boat and its equipment, to familiarize groups of local fishermen in this type of offshore operation, to test various

Jamaica (Contd.):

types of artificial trolling lures, and to make a general survey of the banks in respect to locating the best areas for trolling tuna, bonito, and other pelagic species, as well as to ascertain good bottom fishing grounds for certain demersal species. Fishing activities consisted mainly of surface trolling during daylight hours and handlining for yellowtail snappers, jacks, and groupers during the night.

From the results obtained during the period it was found that "blackfin" tuna was more in abundance than other tuna species and was almost invariably found along, and close to, the windward or eastern edges of the bank.

It was estimated that "blackfin" tuna constituted roughly 50 to 60 percent of the total troll-caught fish, the other species being dolphin, kingfish, barracuda, bonito, and an occasional yellowfin tuna. The most encouraging results with trolling were obtained on a five-day trip to Formigas Bank in October 1961 when 3,500 pounds of fish were caught. Trolling lures found most successful included 4½-inch to 6-inch white whale bone jigs and white feather jigs of from ¼ ounce to 2 ounces for smaller tuna and 5 ounces for kingfish.



Japan

PACK AND SHIPMENTS OF CANNED TUNA IN BRINE FOR EXPORT TO UNITED STATES:

The Japanese tuna packers association in May 1962 announced the production and shipment of canned tuna for export to the United

CANNED TUNA IN BRINE EXPORT PRICES RAISED:

The Japan Canned Foods Exporters Association held a regular meeting of its Canned Tuna Sales Committee on May 10, 1962, to discuss canned tuna for export to the United States, which was to be offered for sale in May. The meeting was attended by the head of the Tokyo Canned Tuna Sales Company. He stated that for the May sale, a total of 230,000 cases of canned tuna in brine (consisting of 120,000 cases of white meat tuna and 110,000 cases of light meat tuna) would be offered. The prices would be increased by 25 cents per case for white meat tuna and by 10 cents per case for light meat tuna. The new prices would be US\$10.20 per case for white meat tuna and \$7.80 per case for light meat tuna, f.o.b. Japan. Deliveries were scheduled for May and June.

At the meeting, the 18 authorized exporting firms were requested to place their orders for canned tuna by May 15. (Suisan Tsushin, May 11, 1962.)

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CANNED TUNA IN BRINE FIFTH EXPORT SALE TO U. S. EXCEEDS QUOTA:

The Japan Canned Foods Exporters Association invitations for the fifth or "May" sale of canned tuna in brine for export to the United States were closed on the deadline date of May 15, 1962. It was found that the total quantity applied for by the 18 outlet firms had amounted to about 240,000 cases, or about 10,000 cases above the announced quota of 230,000 cases. Prices were up 25 cents a case for white meat or albacore and 10 cents for light meat. (From Japanese periodicals dated May 22 and 23, 1962.)

The tuna department of the Association on May 21 formulated a draft of this year's in-

Japanese Pack, Shipments, and Stocks of Canned Tuna for Export to U. S.

Japanese Pack, Shipments, and Stocks of Canned Tuna for Export to U. S.				
	Brought Forward from FY 1961 (April 1, 1961)	Fiscal Year 1961 Quantity		On Hand at End of FY 1961 (March 31, 1962)
		Packed	Shipped	
		(Cases)		
White meat	294,274	1,337,980	1,539,319	92,935
Light meat	305	1/1,040,033	754,657	285,681
Total	294,579	2/2,378,013	2,293,976	378,616

1/Yellowfin used for 165,144 cases.
2/Includes 72,549 cases for countries other than U. S.

1/Yellowfin used for 165,144 cases.

2/Includes 72,549 cases for countries other than U. S.

States in fiscal year 1961 (April 1961-March 1962), according to a translation from the Japanese periodical Suisan Tsushin, May 22, 1962.

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tertrading firm agreement on the export of canned tuna in brine to the United States. The draft was to be presented for the approval of a directors meeting scheduled for May 25 and an extra general meeting scheduled for June 5. The agreement drafted covers 860,000

Japan (Contd.)

cases and will be effective from about June 18 up to the end of November.

The total export target to the United States for canned tuna in brine had been 2,200,000 cases, but 1,340,000 cases had already been sold by May 1962, hence the 860,000 cases.

The wording of the agreement has not changed materially from the former agreement, except that the export of canned tuna items other than in-brine and the in-oil packs may be exported to the United States if the normal formalities have been complied with.

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CANNED TUNA IN BRINE MARKET SURVEY IN MIDWESTERN UNITED STATES:

The Japan Export Trade Promotion Association (JETRO) recently released a report on the marketing of Japanese canned tuna in brine in the United States based on market studies it had conducted in the Midwestern States of the United States. A translation of the report follows.

The purpose of the survey was to determine the possibilities of expanding the market for Japanese tuna packed in brine in the midwestern region of the United States by conducting a market survey in the three large Midwestern cities of Cleveland, Detroit, and Milwaukee. Specifically, the survey was conducted to collect and evaluate data in relation to:

1. Status and trend of canned tuna market in the three cities.
2. Sales of Japanese canned tuna in brine in the three cities compared with sales of canned tuna packed by other countries.
3. Views of the industry concerning prospects of marketing Japanese canned tuna in brine in the three cities.
4. Composition of canned tuna consumers in Detroit and Milwaukee with particular attention paid to consumer experience with and response to canned tuna in brine.

In making this study, all data related to the economic and marketing conditions in the surveyed area were thoroughly examined and analyzed. A study of the economy of Cleveland, Detroit, and Milwaukee revealed that the three cities had a combined population corresponding to 18 percent of the total population of the five states of Illinois, Indiana, Michigan, Ohio, and Wisconsin, which border the Great Lakes, and a purchasing power per family higher than any other cities in that region. The areas surrounding the three cities and Chicago are the most important commercial centers in the Midwest, and logically suited for the development of a market for Japanese canned tuna.

No accurate information could be obtained on the sales of canned tuna (both domestic and imported products) in the Midwestern States, but the 1961 sales of United States canned tuna in the Midwestern States is estimated to have reached 3.5 to 4 million cases (No. 1/2 48's), or 22-25 percent of the total of 15.6 million cases packed in the United States in 1961. Since most of the domestically-packed canned tuna in the United States is intended for the retail market, it can be assumed that the sales figures for the Midwestern States roughly indicate the extent of the canned tuna retail market in those areas.

In 1961 the United States imported between 2-3 million standard cases of tuna packed in brine from Japan, of

that, approximately 450,000 cases were sold in the midwestern region, principally in large cities near the Great Lakes where approximately 350,000 cases were sold. Thus, sales of Japanese canned tuna throughout the midwestern United States amount to not more than 4-5 percent of the total United States imports of Japanese canned tuna in brine.

Canned tuna consumption per family per year in Cleveland and Milwaukee is 0.4 case and in Detroit 0.7 case, so Detroit can be considered an important market for canned tuna. In those three Midwestern cities, two United States tuna brands dominate the market, their sales accounting for 75-80 percent of the total canned tuna sales; whereas, sales of Japanese canned tuna are only 3-9 percent of total sales. United States packers of the two leading brands conduct extensive advertising throughout the United States and have established a firm foundation for their products; whereas, advertising of Japanese canned tuna is indeed meager.

A study of the distribution of canned tuna in brine in 24 supermarkets located in the three Midwestern cities revealed a startling fact. That is, Japanese canned tuna was not (fully) displayed on the shelves of these supermarkets and so it had no impact on consumers. Concerning this, the purchasing officers of 2 or 3 supermarkets in the Cleveland area expressed disappointment at the slow sale of Japanese canned tuna in brine until now and they stated that they would have to drop this item from their list of regularly-stocked items unless sales improve.

In Milwaukee, 62 percent of the consumers knew about tuna packed in brine, and in Detroit the percentage was 52. Most of the consumers first learned about canned tuna in brine by seeing it in a store, which goes to show how important it is to display merchandise on the store shelves, and what is important in this regard is to reach that group of consumers who do not know about tuna packed in brine, for they are the potential buyers of Japanese canned tuna.

To the question, "Don't you think you will like tuna packed in brine?" asked in Detroit, about 26 percent of those who claimed they were not familiar with the product answered, "I think I may get to like it," 42 percent said, "I don't think I will come to like it," and 32 percent were not sure. In Milwaukee, 40 percent thought they would come to like it. From this survey, the virgin market in Milwaukee seems to show greater potentiality than that in Detroit.

In Detroit and Milwaukee, the main reasons why the people thought they would like canned tuna in brine are as follows (arranged in order of importance):

1. They dislike oil and fat.
2. They thought tuna packed in brine was preferable from the standpoint of health, dietary, and cholesterol considerations.
3. Tuna packed in brine has a more natural, real flavor.
4. They always discard the oil contained in canned tuna.

Among the group who thought they would not like canned tuna in brine, 45 percent thought canned tuna in brine was too salty, and 25 percent said canned tuna in brine was dry and tasteless.

These opinions should be carefully studied by Japanese packers of canned tuna in brine.

The people connected with industry all agree that there are indications that the demand for canned tuna in brine, as well as in oil, on the retail level will continue to grow during the next several years in Cleveland, Detroit, and Milwaukee, although not as rapidly as it did 4 or 5 years ago. In Detroit, where the per family consumption level is already high, canned tuna demand cannot be expected to rapidly increase, but the demand in the Milwaukee and Cleveland markets should rise considerably.

Japan (Contd.):

The question then arises as to how Japanese canned tuna can be made to appeal to the consumers in the three large Midwestern cities. This can be done by acquainting the people with canned tuna in brine, for there are many people in these three cities who do not yet know of the existence of this product. Experience has shown that a good percentage of consumers who have been introduced to canned tuna in brine through sampling programs eventually become regular buyers of this product. Besides, consumers of canned tuna in brine are very fond of this food—as was shown by the consumer survey conducted earlier.

Next, the great effectiveness of canned tuna in brine in controlling cholesterol level and overweight problems can be stressed. The survey conducted earlier clearly showed that the people were attracted to canned tuna in brine mainly because they thought it was a more healthful food than tuna canned in oil and that it possessed greater dietary value. Another point which should be stressed is that high quality canned tuna in brine can be purchased for about the same price as chunk-style canned light meat tuna packed in oil.

Consumers in Cleveland and Detroit have a much stronger preference for white meat tuna than actual sales indicate. In Milwaukee, however, more people favor light meat tuna, even in solid packs. Another fact which should be overlooked is that there are many housewives who regularly buy chunk-style canned tuna because of the convenient sizes of chunk slices for cooking. In view of this, if the Japanese packers produce and export high quality chunk-style canned tuna to the United States, Japanese exports of canned tuna should increase. Moreover, a more extensive display of chunk-style canned tuna in brine on store shelves will increase the overall competitive power of Japanese canned tuna in brine.

The demand for big lots of canned tuna is steadily rising in the three Midwestern cities covered in this survey. In Cleveland and Milwaukee, the demand is increasing at a higher rate (5 percent) per year than in Detroit, which never has been able to develop a good restaurant trade. The businessmen in the three cities who were interviewed said that the market for canned tuna has not yet reached a "saturation point." However, we should not be complacent about this situation. In the three large Midwestern cities, big lot sales of Japanese canned tuna in brine may not increase as much as the sales through retail outlets, but before trying to increase the percentage of trade with the retail outlets, Japan should make sure that large lot sales in the three Midwestern States are increased and maintained at a 7 percent level per year.

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TUNA LANDINGS AT YAIZU,
APRIL 1962:

A total of 10,130 metric tons of fish valued at US\$3.3 million was landed at Yaizu, leading Japanese tuna fishing port, during April 1962. This was less than what was landed in the same month last year because of poor skipjack and mackerel fishing. In

Yaizu Fishery Landings, January-April 1962 and 1961				
Species	April		Jan.-April	
	1962	1961	1962	1961
	(Metric Tons)			
Albacore	1,268	1,215	5,931	5,243
Skipjack	1,000	1,942	1,682	2,111
Other tuna	6,365	7,080	24,584	26,097
Mackerel	845	1,351	4,411	3,130
Other fish	652	584	2,852	2,603
Total	10,130	12,172	39,460	39,184

April 1961 landings totaled 12,172 tons, valued at \$3.4 million. The season for skipjack and mackerel this year was delayed by adverse current conditions. Skipjack landings this April were down about 50 percent and mackerel landings were down 37 percent from last year's. In addition, Indian tuna fishing came to an end earlier than usual and landings of tuna other than skipjack and albacore were somewhat less than last year.



Japanese tuna long-liner leaving Yaizu, principal tuna port, for the Indian Ocean fishing grounds.

Landings at Yaizu for January-April 1962 of 39,460 tons exceeded slightly the previous year's landings. (Suisan Keizai Shimbun, May 19, 1962 & other Japanese periodical of May 12, 1962.)

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PROSPECTS FOR SKIPJACK AND
ALBACORE TUNA FISHING OFF JAPAN:

With the peak of the season for skipjack and albacore tuna off Japan about to begin early in May, generally pessimistic views on skipjack fishing were expressed late in April 1962 because of an over-all decrease in the number of fishing vessels fishing for skipjack this year and conditions of rising temperatures in the path of the Black Current off Japan.

According to the Shizuoka Prefecture Fisheries Experimental Station, while the cold-water mass in the Enshunada Sea is about the same size as a normal year, the strength of the Black Current is not as powerful, and so is the reverse current on the edge of the main stream. The rising of temperatures is also somewhat behind time. Landings in the Prefecture during March amounted to some 500 tons, nearly twice as much as in the corresponding month last year, but the majority of catch was assumed to be the fish more or less stationary in inshore waters. To substantiate the delayed arrival of migrating fish, landings decreased to almost half at the beginning of April. The catch trend for skipjack is very similar to that in 1957 when it was only fair.

Japan (Contd.):

The number of vessels fishing skipjack totaled 160 or 170 last year, but it is anticipated to be around 100 this year. Prospects are not bright for the skipjack tuna fishery off Japan this year.

Because of delayed rising temperatures of the Black Current, once albacore tuna schools of regular size arrive, a good fishing area will be formed in inshore waters for a comparatively long period.

Not only large vessels capable of fishing in offshore waters have decreased, but also the delayed completion of the guidance vessel *Fuji Maru*, now under construction, proves to be a great handicap in locating fishing grounds beyond the inshore waters. Observers are inclined to feel that the season's albacore and skipjack catch off Japan will now depend entirely upon the possible development of fishing grounds in offshore waters.

At a meeting of the Japan Fisheries Academic Society, a technician of Tokai University Fisheries Research Institute announced that fishing for albacore further north this year will yield an abundant catch. To substantiate his new theory, he cited the capture by Japanese vessels of two albacore tagged and released by United States biologists in the Eastern Pacific. (*Suisan Keizai Shimbun*, April 27, 1962.)

It has always been an established theory that albacore in the Pacific fishing grounds have the habit of migrating from east to west. At the point where two Japanese tuna vessels retrieved the American-tagged albacore and others, there have been instances where Japanese vessels caught tuna tagged and released from the American side. This fact substantiates the theory that fish migrate from east to west, and moreover, their migration from north to south has also been established clearly. Comparison of body length at the time of release and capture showed a remarkable growth.

Albacore schools have the habit of following a school of smaller fish, small fish are followed by medium fish, and again by large fish. Should a fishing vessel discover a school of small fish, a large catch of albacore is assured with the medium and large fish to follow. On the contrary, if the large fish are found first, fishing will be poor because only the large ones are caught and no other schools of smaller sizes will follow.

In the fishing area some 800-1,600 kilometers off Nojima-zaki Cape, Chiba Prefecture, based on the east-west migration theory in the past, the capture of fish schools that migrate north to south cannot be fished easily. There is no doubt about having a good albacore catch if fishing is done further north. The fishing season too may last one month longer than in the past—beginning in May and going through July.

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SKIPJACK AND ALBACORE FISHERY TRENDS, MAY 1962:

The late start in skipjack fishing off Japan this season was caused by the weakened strength of the Black Current. The fish were about one month late. But during the first half of May 1962 there were signs that fishing would be normal with better weather. At Yaizu, 368 tons of skipjack were landed early in May, followed by 190 tons a day or two later. Such landings of large quantities were the first for this season.

The fishing grounds as of mid-May were located at 33° N. latitude, 136°-137° E. longitude, off the Shinomisaki Cape, tip of the Kii Peninsula, in the central part of Honshu, and 34° N. latitude, 138° E. longitude, off Omaezaki Point, Shizuoka Prefecture, in the Enshunada Sea. Good fishing was reported on those fishing grounds in mid-May. There were prospects that the good fishing would continue for awhile. Chiefly tuna vessels from Mie Prefecture were fishing in the area, but vessels from other prefectures were also concentrating at those fishing grounds.

Oceanic and fishing conditions May 6 through 10 were reported by the Yaizu Branch of Tokai-ku Fisheries Research Institute as follows:

The water temperature was gradually rising, and the cold water mass in the Kumanonada Sea and a low temperature area southwest off Shinomisaki Cape were beginning to show signs of dwindling. In the Enshunada Sea, a branch of the Black Current moving northward along the Izu Seven Islands was projecting itself rapidly and warm water of 20°-21° C. (68°-69.8° F.) was passing two fishing grounds in the west of the archipelago and moving up to a point south of Omaezaki Point. At 120 miles southeast of the point, a warm water belt of 20°-21° C. was approaching the edge of the cold water mass where a good skipjack fishing area was developing.

Accordingly, at 60-70 miles west of the fishing ground in western waters of the archipelago and around Miyakejima Island of the Izu Seven Islands, good fishing areas for skipjack were developing where daily catches of some 10 metric tons were being made. Also, good fishing of the same degree was going on off Shinomisaki Cape and this fishing ground was moving south southeasterly toward the cold water mass and the warm water belt. Active fishing was also reported in the sea area around the Bonin Islands where small skipjack of 2.5 to 4.5 pounds each were being caught.

The albacore fishing ground developing around 29° N. latitude, 132° E. longitude was shifting early in May somewhat northwardly and approaching the 30° N. latitude line. Fishing was only fair. In the sea area, 29° 30' N. latitude, 135° 20' E. longitude catches of 2-3 tons a day were reported. Almost no catches were made in the area southeast of Kinansho, south of Shinomisaki Cape.

The Mie Prefecture Fisheries Experimental Station in mid-May 1962 made public its report on skipjack and albacore fishing conditions off Japan.

"Skipjack: The principal part of the skipjack school that has arrived on the main stream of the Black Current via southwestern islands is gathering on the main stream of the warm current, moving east northeasterly on the north side of the cold water mass in the Enshunada Sea, from the main stream of the Black Current between Murotomisaki Point and Shinkurose Shoal. The school following is seen in waters off Ashizurimatsuki Point, Shikoku, and it is a fairly large size one. The school moving northward around Iwo Jima, south of the Izu Seven Islands, is expected to arrive at fishing areas south of the Izu Peninsula in the near future. The border between the cold water mass and the main stream of the Black Current in the Enshunada Sea is offering a suitable place for skipjack schools to linger. Accordingly, it will be a principal fishing area in the latter part of May and beginning of June. The waters off the Nojima-zaki Point will not be active until the beginning of June.

"Albacore: A point 100 miles south of Ashizurishima Point, Shikoku, some 70 miles northwest of Kinan Rock has sea conditions suitable for schools to come to the surface. Sporadic good fishing can be expected at various fishing grounds shortly. Also, at a point about 50 miles west of Hachijima Island similar conditions exist. This school is expected to concentrate off Nojima-zaki Cape toward the end of May and in the first part of June where regular fishing is anticipated when it will come to the surface in a wide area." (*Suisan Keizai Shimbun*, May 19 and 23, 1962.)

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SUMMER ALBACORE TUNA SEASON STARTS:

Japan's summer albacore tuna season started with landings of more than 100 metric tons in two successive days at Yaizu as of May 2, 1962, according to a translation from a Japanese periodical. But only 42 vessels were operating as of that date: 24 from Shizuoka Prefecture and 18 from Mie Prefecture. There were 90 vessels engaged in the fishery at the same time last year. Under the cir-

Japan (Contd.):

cumstances, landings were smaller than last year. The high price early this May was US\$384 per ton as compared to \$276 a ton a year earlier. Cannery were doing the buying, but even for them the price was thought to be too high.

At the peak of the season last year in mid-June, 190 tuna vessels were operating in the albacore fishery. This year, with more larger vessels, the operating vessels are about 60-70 percent of last year's number. A large quantity of summer albacore this year is not expected. (Suisan Keizai Shimbun, May 2, 1962.)

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SUMMER ALBACORE TUNA LANDINGS AS OF MID-MAY 1962:

Fishing for summer albacore tuna off Japan was poor during the first half of May 1962. The development of the fishery was being watched with anxiety by cannery in the Shimizu district of Japan. The number of fishing vessels operating in the fishery is far less than in the past, and the ocean pattern does not seem to allow the smaller fleet to catch the fish in waters not too far from land.

The landed or ex-vessel price had risen from ¥150 to ¥155 per kilogram (US\$378-390 a short ton), with an expected probable increase to ¥160 a kilogram (\$404 a short ton). The cannery fear that the same thing might occur as in 1960 when the production quota for canned albacore or white meat tuna was not attained.

Daily landings of 60-80 metric tons of summer albacore at Yaizu, Japan's leading tuna port, were being maintained with a smaller number of vessels fishing. Unless landings of several hundred tons a day were made in the future, the cannery would not be able to fill their production quota. (Suisan Tsushin, May 14, 1962.)

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FROZEN TUNA PRICES REPORTED FIRM:

Prices for Japanese-caught Atlantic Ocean tuna are expected to go up (according to the Japanese periodical Suisan Tsushin of May 15, 1962), as a result of expanding markets and decreasing catches. Yellowfin tuna de-

livered to Italy as of early May brought \$360 a metric ton and big-eyed tuna \$335 a metric ton. Both prices are \$10 a ton above those originally agreed upon by Japan and Italy.

Yugoslavia is purchasing Japanese yellowfin tuna for \$370 a metric ton and big-eyed tuna for \$355 a metric ton. Originally, Yugoslavia had contracted to purchase yellowfin for \$360 a metric ton and big-eyed for \$335 a ton.

Because of the shortage of raw tuna, United States tuna packers are not as selective in their tuna purchases as before and are reported to be willing to accept large yellowfin tuna, instead of only small yellowfin as before, Suisan Tsushin states. Japanese export firms feel that the United States packers may start purchasing Atlantic Ocean big-eyed tuna in the future.

The export price of albacore tuna in Japan proper is also reported very firm. One United States packer is said to have made an offer to purchase albacore for \$375 a short ton, f.o.b. Japan. However, Japanese canned tuna packers are reported to be buying up most of the albacore, both clipper-caught fish and pole-caught fish, and are paying \$378 per short ton ex-vessel. For this reason, frozen albacore for export purposes was reported to be difficult to procure as of early May.

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ADJUSTMENTS PROPOSED IN FROZEN TUNA EXPORT QUOTAS TO EUROPE AND AFRICA:

The Japan Export Frozen Tuna Producers Association held a directors meeting on May 10, 1962, and voted to accept the proposal to change regulations governing export of frozen tuna and tunalike products to Europe and Africa in fiscal year 1962 (April 1962-March 1963). This proposal was to be presented for adoption to the Association's general meeting on May 25.

Changes proposed are: (a) The regulations to be effective for a period of 9 months beginning July 1962 and ending March 1963. (b) For this nine months period, the tuna export quota to Italy be set at 9,000 metric tons, and this quota be allotted to exporters on the basis of past performances. Also, the number of trips a fishing vessel can make be increased by 0.375 trip per vessel. (Editor's Note: This means that a 1,000-ton capacity vessel can land an additional 375 tons of tuna above

Japan (Contd.):

its present quota, or a 500-ton capacity vessel can land an additional 187.5 tons of tuna.) (c) Regulations limiting tuna landings at European and African ports other than Italian ports to two trips be abolished.

As for transshipping Indian Ocean tuna catches to Italy, this is still prohibited under current tuna export regulations. (Suisan Tsushin, May 11, 1962.)

ATLANTIC TUNA FISHERY TRENDS, FIRST QUARTER 1962:

Each Japanese tuna vessel in the Atlantic Ocean had been making satisfactory catches up to the middle of March 1962, but since then the catch ratio drastically fell. Taking the case of a large vessel with catchers carried on deck, 12-15 tons a day was its average catch in the first and middle part of March. The bulk of the catch was yellowfin.

The same drastic decrease in yellowfin catch ratio occurred in April last year and all the vessels were compelled to move southward to big-eyed tuna areas and sales were adversely affected. Should poor yellowfin fishing continue from spring through the beginning of summer for two successive years, the desire to fish in the Atlantic will be greatly affected.

Reports coming from the tuna vessels fishing in the South Atlantic indicate that it takes more fishing days to fill the fish holds. This results in an increase in operation costs. To explain the seriousness of the situation, it is said that heretofore it took only one month or 50 days to fill a tuna vessel, but now it takes three months of fishing.

On the bright side, another later report said that 77 Japanese tuna vessels, were fishing in the Atlantic as of May 1962, and the average daily catch for a 500-ton vessel with a catcher carried on deck is said to be 8-10 tons. A noticeable recovery from poor fishing in March was noted as of early May, but this was still less than last year's average daily catch of 10-12 tons per day. About 60-70 percent of the catch was yellowfin and about 10 percent big-eyed. Fishing was reported to have moved northward a little early in May and was concentrated around 10° N. latitude and 20° W. longitude. As last

year poor fishing began in mid-June, there was some speculation as to whether or not this would again occur this June. (Suisan Tsushin, April 17 and May 15, 1962.)

ATLANTIC OCEAN TUNA FISHING IMPROVES:

Japanese tuna long-line vessels in the Atlantic Ocean as of early May 1962 totaled 77 vessels. Reports indicate that fishing which was poor in March had improved. Catches consisted of 60-70 percent yellowfin and about 10 percent big-eyed tuna. The Japanese vessels are reported to be concentrated in the vicinity of 10° N. latitude and 20° W. longitude. (Suisan Tsushin, May 8, 1962.)

TUNA MOTHERSHIP FLEETS SCHEDULED TO DEPART FOR FISHING GROUNDS:

A large Japanese fishing company's tuna mothership Koyo Maru (7,500 gross tons) and another firm's tuna mothership Nojima Maru (8,800 gross tons) were scheduled to depart from Japan for the tuna fishing grounds near the Fiji Islands in the South Pacific Ocean. The Koyo Maru was scheduled to depart from Tokyo on May 25, 1962, and is expected to return to Japan in late October, and will be replaced by the firm's second tuna mothership Tenyo Maru No. 3 (3,710 gross tons). Catch target for the Koyo Maru fleet is 11,000 metric tons of fish, including 8,030 tons of tuna, 1,870 tons of spearfish, 990 tons of sharks, and 100 tons of other miscellaneous fish. About 70 vessels, ranging in size from 80-360 tons gross, will make up the Koyo Maru fleet.

Three large refrigerated carrier vessels were expected to be assigned to the Koyo Maru fleet to transport frozen tuna to Japan and the United States. They are the Banshu Maru No. 38 (990 gross tons), which was expected to depart Shimonoseki around May 20; followed by the Banshu Maru No. 35 (990 gross tons) in June; and shortly thereafter by the Banshu Maru No. 36 (990 gross tons). (Suisan Keizai Shimbun, May 15 & 17; Minato Shim-bun, May 16, 1962.)

Supply vessels assigned to the Koyo Maru fleet will make a total of 7 trips to haul catches, 3 trips to Japan, and 4 trips to the United States. Shipments to the United States are to be transshipped from Suva. Estimated dates of carrier vessel arrivals in Japan are August 5, August 19, and September 15. Esti-

Japan (Contd.):

mated dates of carrier vessel departures from Suva to the United States are June 15, September 11, September 30, and November 10.

The Nojima Maru fleet (composed of 65 vessels) was scheduled to depart from Kobe on May 17 and will operate in the South Pacific Ocean until late October. Its catch target is 8,000 metric tons of fish, including 3,382 tons of albacore and 2,848 tons of yellowfin tuna. (Minato Shimbun, May 13, 1962.)

CATCHES BY TUNA MOTHERSHIP FLEETS IN THE PACIFIC OCEAN, 1961:

The Japanese Fisheries Agency compiled the 1961 catch by tuna mothership fleets in the Pacific Ocean. Five fleets operated, of which three belonged to one fishing company.

Catches by Japanese Tuna Mothership Fleets in the Pacific Ocean, 1961		
Fleet	No. Catchers	Catch Metric Tons
<u>Tenyo Maru No. 3</u>	40	6,542
<u>Koyo Maru</u>	35	4,515
<u>Tenyo Maru</u>	49	6,525
<u>Nojima Maru</u>	49	8,268
<u>Jinyo Maru</u>	36	3,083
Total	209	28,933

The fleets operated in Fiji waters with a quota of 22,000 metric tons. The total catch was 28,933 tons, including the quota in lieu of retired tuna vessels. (Suisan Keizai Shim-bun, May 9, 1961.)

TUNA MOTHERSHIP REGULATIONS UNDER STUDY:

The Japanese Fisheries Agency early in April was studying regulations governing mothership-type tuna-fishing operations for FY 1962 (April 1962-March 1963) and was expected to announce the new regulations by early May. This year the Fisheries Agency reportedly intends to expand the tuna fishing grounds somewhat westward in view of the nuclear tests by the United States in the South Pacific. The Fisheries Agency is also expected to give consideration as to whether or not: (1) maintain the catch quota at 22,900 metric tons as in FY 1961 (April 1961-March 1962); (2) discontinue the system which allows tuna mothership companies to augment catch quotas allocated to their mothership fleets by retiring tuna fishing vessels from

the tuna fishery for specified lengths of time and, instead, increase their catch quota by 20 percent, with the increase to be based on actual past production, and (3) discontinue the current method of regulating catch based on allocation of fixed quotas to motherships and, instead, control catch by assigning quotas to catcher vessels assigned to the motherships.

The Fisheries Agency is not likely to approve the tuna industry's request to relax tonnage restrictions placed on tuna catcher vessels assigned to motherships, nor the use of portable vessels for experimental fishing. However, the Agency plans to authorize use of medium (40-100 tons) fishing vessels retired from the salmon fishery. (Suisan Keizai Shimbun, April 22, 1962.)

JAPANESE RECOVER AMERICAN-TAGGED ALBACORE TUNA:

An albacore tuna tagged by the Oregon State Fisheries Commission was reported to have been recovered by the Japanese tuna vessel Ryokichi Maru No. 6. The tag was sent to the Tokai University's Fisheries Research Laboratory. According to the Laboratory, the albacore was tagged on September 10, 1961, at 46°17' N. latitude, 126°07' W. longitude and recovered with troll gear on March 14, 1962, at 28°02' N. latitude, 140° 50' E. longitude. The fish weighed about 15 pounds when tagged and released.

A second albacore tag recovery was also reported by the Laboratory. This recovery was made by the Japanese tuna vessel Kyo-shin Maru No. 5 on February 14 around the Bonin Islands (at 28°50' N. latitude, 146° E. longitude). The fish when caught was 83 centimeters (32.7 inches) long and weighed 17 kilograms (37 pounds). The albacore was tagged and released off the border of the United States and Canada (at 46°17' N. latitude, 126°07' W. longitude) by Oregon biologists. When released on September 10, 1960, it weighed about 14 pounds and measured 68 centimeters (26.8 inches). It took 524 days to swim from the American coast to the point where it was captured. According to the Tokai University Fisheries Research Laboratory, this is the first time a tagged albacore has been recaptured south of 28° N. latitude. (Suisan Keizai Shimbun, April 20, 1962.)

TUNA VESSEL SIZE CLASSIFICATION TO BE ELIMINATED:

According to the Japanese Fisheries Agency, the Fisheries Law is being revised

Japan (Contd.):

to eliminate the present distinction made between medium tuna vessels (40-100 tons) and distant-water tuna vessels (over 100 tons) and to combine the two classes of vessels into one category.

As for medium purse-seine vessels presently licensed by prefectural governors, those that are powered and exceed 40 tons gross are expected to be placed in the same category as powered vessels of over 60 tons gross and will henceforth be licensed by the Minister of Agriculture and Forestry. (Suisan Keizai Shimbun, April 22, 1962.)

LOANS PROPOSED FOR CONSTRUCTION OF TUNA VESSELS:

The Japanese Fisheries Agency reportedly is recommending that the Government-operated Agriculture and Fishery Finance Corporation extend 1.8 billion yen (US\$5 million) of loans to owners of the 81 gill-net vessels displaced from the eastern Hokkaido land-based salmon fishery in 1962 to enable them to construct 99-ton tuna vessels. This amount exceeds the fund authorized by the Finance Corporation for vessel construction, so to provide these loans the Agriculture and Forestry Ministry will have to revise the Finance Public Corporation Law and the Finance Ministry will have to prepare a supplementary budget for submission to the Special Diet session, which convenes in July.

The vessel loans to be provided by the Finance Corporation will be used to finance up to 80 percent of the cost of constructing a total of 50 tuna vessels, each of 99 tons gross. The loans will be payable in 10 years for steel vessels and 7 years for wooden vessels at 7.5 percent interest. (Shin Suisan Shimbun, May 7, 1962.)

FIRM PLANS TUNA FISHING FROM AMERICAN-SAMOAN BASE:

A large Japanese fishing company is reported to have submitted an application to the Fisheries Agency to engage in tuna fishing from the American-Samoan base. Under the plan, 30 fishing vessels belonging to fishing firms (whose vessels were withdrawn from the salmon fishery this year) affiliated with the large fishing firm will be contracted to fish for tuna out of American Samoa.

The catches, expected to total 12,000 metric tons annually, will be sold to the United States cannery on American-Samoa through a Japanese trading firm.

The Fisheries Agency is studying whether it should approve the application since two other Japanese fishing firms, which presently have a working arrangement to deliver tuna to the Samoan cannery, are requesting that their present 12,000-metric-ton Samoan quota be doubled. If both applications are approved, the combined quota for the three companies would come up to 36,000 metric tons. That the Fisheries Agency will approve both applications seems doubtful and speculation is that the Agency may approve a total quota of between 18,000-24,000 tons for allocation to the three companies. (Suisan Tsushin, May 24, 1962.)

JAPANESE-UNITED STATES TUNA MEETING PROPOSED

Japanese Minister of Agriculture and Forestry Kono, who attended the Sixth Annual Meeting of the International Northwest Pacific Fisheries Commission (U. S. S. R. and Japan) in Moscow, stopped at Washington, D. C., in May 1962 on his way back to Japan and is reported to have met with U. S. Secretary of the Interior Udall to discuss the promotion of Japanese tuna exports to the United States, according to reports in Japanese periodicals. Reportedly, Minister Kono has suggested to Secretary Udall that a conference be held between Japan and the United States to discuss the matter in detail. The meeting, if held, is expected to be scheduled for late August or early September 1962.

Minister Kono's objective in seeking to hold a Japan-United States tuna meeting is reportedly to seek the expansion of canned tuna exports to the United States and the lowering of United States import tariffs on canned tuna in brine and in oil.

Some Japanese tuna industry members consider that Minister Kono's proposal to Secretary Udall is a political maneuver designed to pave the way for the establishment of the large tuna base in the Fiji Islands, which is the subject of much discussion in Japan at the present time.

The provisional agreement concluded between the Fijian Government and the Japanese industry members involved in the proposed

Japan (Contd.):

Fijian venture calls for the establishment of a two-line cannery at the joint base to process tuna and other fish landed at that base for export purposes. In early March, the Japanese Fisheries Agency publicly announced that the Agency does not intend to approve the establishment of canneries at overseas bases and went so far as to have the large fishing companies pledge that they will not engage in the manufacture and export of canned tuna in brine at their overseas bases.

Industry members feel that by having made the gesture to the United States to seek the expansion of Japanese canned tuna exports to the United States, Minister Kono will be able to state that an increase in tuna exports to the United States is a definite certainty and thereby be able to mollify industry's opposition against the establishment of the joint tuna base in the Fiji Islands when the Japanese Government officially authorizes construction of that base. (Suisan Keizai Shimbun, May 18; Suisan Tsushin, May 16, March 2, and February 17, 1962.)

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FISHERIES AGENCY VIEWS ON USE OF SMALL TUNA VESSELS AT OVERSEAS BASES:

Several Japanese fishing companies have been reported considering using 39-ton tuna vessels, which do not require fishing licenses, at overseas bases. Included in this group is one fishing company which plans on using 39-ton vessels at American Samoa; another which hopes to dispatch two 39-ton vessels to Abidjan, Ivory Coast, where that company plans to establish joint fishing operations with an Italian company; and a third company which plans on operating 39-ton vessels in the Atlantic Ocean.

Responsible officials of the Fisheries Agency have expressed the following views concerning the intentions expressed by the fishing firms to operate 39-ton vessels at overseas bases:

1. The Agency does not have the authority to regulate the operational area of 39-ton tuna vessels. However, exports of tuna come under the trade control ordinance. Depending on where tuna are to be exported and quantities involved, it is possible that the Ministry of Agriculture and Forestry may not approve applications submitted by fishing companies to export tuna caught by 39-ton vessels based at their overseas bases.
2. At the present time, the Agency has no intention of approving exports of tuna caught by 39-ton vessels to areas presently covered under export regulations governing fresh and frozen tuna.
3. In the case of the firm planning to base 39-ton vessels at American Samoa, the Agency cannot stop that company from using the unlicensed vessels as long as total deliveries of tuna to Samoa do not exceed the export quota allotted to the base. However, in the following year, the Agency can reduce the Samoan quota by the amount of tuna landed by the 39-ton vessels in the preceding year. The Agency has unofficially asked the

firm to abandon its plan to use 39-ton vessels, and the firm has complied with the request.

4. Exports of tuna to countries presently not covered under the tuna export regulations will not be prohibited. In this regard, the company's application to base two 39-ton tuna vessels at Abidjan will probably be approved.
5. The company planning to operate 39-ton tuna vessels in the Atlantic Ocean has been instructed to abandon its plan, if its plan includes exporting the catches to such countries as the United States and Italy. (Suisan Tsushin, April 20 and 23, 1962.)

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TUNA FEDERATION OPPOSES TUNA VESSEL TONNAGE INCREASE:

The Suisan Tsushin of May 2, 1962, states that the announcement made by the Japanese Fisheries Agency that it was considering a plan to increase by 20,000 gross tons, over a two-year period, the authorized vessel tonnage of the Japanese tuna fleet has astounded the Japanese tuna industry. Under this plan, fishermen engaged in the depressed coastal fishery would be issued licenses to operate tuna vessels under 100 tons gross and salmon fishing vessel owners displaced from the salmon fishery this year following curtailment of salmon fishing activities would also be authorized to operate tuna vessels under 100 tons gross. (Editor's Note: A total of 121 vessels were displaced from the salmon fishery.)

The Fisheries Agency's plan is strongly opposed by the National Federation of Tuna Fisheries Cooperative Associations, which maintains that the tuna fishery cannot accommodate an additional 20,000 tons of new tuna vessels in view of limited tuna resources and world tuna market conditions. The Federation points to the danger to tuna resources by citing the following facts: (1) catch rates in all principal fishing grounds have declined to between 65-80 percent of the catch taken 5 years ago; (2) each trip now takes 5-10 days longer than before; and (3) fish sizes are becoming smaller and smaller.

The Agency claims that the Federation's argument does not necessarily indicate a threat to tuna resources and points out the established theory that: (1) catch rate in a new fishing ground fished by long line is initially very high but declines sharply within a few years and subsequently levels off; (2) trip length and fish size are affected by changes in catch rate.

Sufficient data on tuna resources are lacking to pursue a discussion on tuna resources, states the Suisan Tsushin, and the Agency's attempt to push through its plans to authorize many more vessels to enter the tuna fishery seems somewhat unreasonable inasmuch as the Agency does not possess positive data showing that present tuna resources can support greater harvest. Until now, the tuna fishing industry had operated on a profitable basis and expanded by developing new fishing grounds. Should there come a day when new tuna fishing grounds cannot be developed, the fishermen will have to fish in existing grounds where catch rates are lower and it would be highly doubtful whether they can maintain a steady catch, particularly if more fishing vessels begin to fish the same waters.

Concerning world tuna market conditions on which the Agency and the Federation also disagree, the Fisheries Agency believes that the United States, where tuna consumption is annually increasing, will begin to rely more and more on tuna imports from Japan to supplement the tuna shortage existing in that country. The Agency also claims that possibilities exist to expand tuna exports to Czechoslovakia, France, Yugoslavia, and other European countries, and that domestic consumption of fish sausage is continually increasing.

The Federation argues that the United States and European countries are expanding their tuna fishery, and in Europe the Common Market has established an annual import quota of 25,000 metric tons for member nations in order to restrict tuna imports. Concerning domestic consumption of fish sausage, the Federation claims that the increase heretofore witnessed in Japan cannot be expected to continue, and that the world demand for tuna can be adequately supplied by expanding tuna bases abroad and increasing transshipments.

Japan (Contd.):

The views expressed by the Federation appear reasonable and seem to reflect widely the views shared by the tuna industry, reports the Suisan Tsushin. However, it cannot be denied that currently a world-wide shortage of tuna exists and tuna prices are abnormally high, and there does not appear to be a ready solution to this problem. (Suisan Tsushin, May 2, 1962.)

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YEAR-ROUND TUNA FISHING LICENSES GRANTED TO FORMER SALMON FISHING VESSELS:

The Japanese Fisheries Agency has decided to grant year-round tuna fishing licenses to the 50 fishing vessels that were withdrawn from the salmon fishery in 1960. The 50 vessels had previously been allowed to engage in tuna fishing for only nine months of the year, and remained idle for the remaining three months. (Suisan Keizai Shimbun, April 22, 1962.)

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FISHERIES AGENCY CONSIDERING PLANS TO AUTHORIZE DISPLACED SALMON VESSELS TO FISH FOR TUNA:

The Japanese Fisheries Agency reduced the size of the salmon fleet by a total of 121 salmon vessels this year and has, for some time, been studying ways in which these vessels could be compensated and used in some other fishery. Apparently, the Agency intends to assign these displaced salmon vessels to the tuna fishery and is reported to be considering the following methods for doing this:

1. Salmon vessels licensed by the Minister of Agriculture and Forestry (vessels over 30 tons gross) which quit salmon fishing altogether will be granted year-round 95-ton tuna vessel licenses.

2. Salmon vessels licensed by prefectural governors (5- to 30-ton vessels) which quit salmon fishing altogether will be granted year-round 70-ton tuna vessel licenses.

3. Fishing vessels temporarily withdrawn from the salmon fishery will be granted 6-month 85-ton tuna vessel licenses.

Evidently, the Fisheries Agency does not intend to grant distant-water tuna-vessel (over 100 tons) licenses to the vessels displaced from the salmon fishery.

As of May 1, 1962, 6 salmon vessels announced that they would quit salmon fishing altogether and 4 vessels announced plans of temporarily withdrawing from the salmon fishery. Based on this sample of 10 vessels, it is estimated that an equivalent of 9,500-9,700 tons of tuna vessel licenses will be granted to salmon vessels displaced from the salmon fishery this year. (Suisan Tsushin, May 2, 1962.)

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GOVERNMENT ISSUES REGULATIONS ON DISPLACED SALMON VESSELS PLANNING TO FISH TUNA:

The Japanese Fisheries Agency announced on May 28, 1962, its official policy concerning the granting of tuna fishing licenses to the 122 salmon fishing vessels displaced from the salmon fishery this year. According to the Agency, tuna-fishing licenses will be granted only to those displaced salmon fishing vessels which submit applications to engage in tuna fishing, in which case the regulations shown below will apply:

1. Salmon fishing vessels engaged in the mothership-type salmon fishery and salmon fishing vessels over 30 tons gross engaged in the land-based salmon fishing which plan to quit salmon fishing permanently will be granted year-round under-100-ton tuna vessel licenses. Applications notifying their intentions must be submitted before March 31, 1963.

2. Salmon fishing vessels over ten tons gross but less than 30 tons gross engaged in the land-based salmon fishery which plan to quit salmon fishing permanently will be granted year-round under-70-ton tuna vessel licenses. Applications notifying their intentions must also be submitted by March 31, 1963.

3. Salmon fishing vessels engaged in the mothership-type salmon fishery and in the land-based salmon fishery which do not plan to quit salmon fishing permanently will be granted 6 months 85-ton tuna vessel permits. The permits must be used between the period beginning May 26, 1962, and ending March 31, 1963, and will be effective for a continuous 6-months period from the date of their issuance. (Suisan Tsushin, May 29, 1962.)

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Japan (Contd.):

SALMON FLEET BEGINS FISHING IN WATERS SOUTH OF 45° N. LATITUDE:

On April 30, 1962, a total of 702 land-based Japanese salmon fishing vessels (333 gill-net and 369 long-line vessels) left Hokkaido for the northwest Pacific salmon fishing grounds south of 45° N. latitude, according to a translation from the Japanese periodical *Suisan Keizai Shimbun*, May 1, 1962. Authorization from the Japanese Government was issued on April 29 for the fleet to engage in gill-net and long-line salmon fishing. The Japanese Government's decision to authorize salmon fishing in the waters south of 45° N. latitude was based on the fact that those waters lie outside the area regulated by the Japan-Soviet Northwest Pacific Fisheries Convention; thus they are not subject to Treaty restrictions. Also, fishing in the unrestricted area could not be delayed any longer since the salmon had already arrived

in that area. The Soviet Government was formally notified of the Japanese decision.

Departure of the Japanese land-based salmon fleets was delayed by 10 days this year due to the deadlocked Japan-Soviet fishery negotiations in Moscow. The Japanese Government has set this year's salmon catch quota for the waters outside the Treaty area at 60,000 metric tons, which is about 20,000 tons less than last year's actual catch. The Government also reduced the salmon gill-net vessels by 20 percent (81 vessels) from last year's 414 vessels, and has issued rigid regulations to ensure compliance with the voluntary catch quota.

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COMPOSITION OF SALMON MOTHERSHIP FLEET:

The 11 Japanese salmon mothership fleets authorized by the Fisheries Agency to fish for salmon this year in Area A (waters north of 45° N. latitude) departed Hokkaido on May 15-16, 1962, for the fishing grounds in the Bering Sea and North Pacific Ocean. Fishing for those fleets is scheduled to end August 10.

Japanese Mothership Fleets Authorized for 1962 Salmon Season	
Mothership Fleet	Size
	<u>Gross Tons</u>
Kyoho Maru	7, 158
Kizan Maru	8, 626
Meisei Maru	8, 336
Meiyo Maru	7, 153
Kashima Maru	7, 163
Otsu Maru	8, 033
Miyajima Maru	9, 598
Shinano Maru	8, 907
Chiyo Maru	7, 653
Jinyo Maru	7, 200
Kyokuzan Maru	10, 912

Catcher vessels assigned to the 11 motherships this year were reduced by 10 percent from last year's 410 vessels. Also, the mothership fleets were reduced by one from last year's 12 fleets. (*Suisan Keizai Shimbun*, May 16, 1962.)

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SALMON INDUSTRY RESTRICTIONS ON USE OF GILL NETS BY MOTHERSHIP FLEETS:

The Northern Waters Salmon Mothership Council (composed of fishing companies operating salmon motherships) and the National Federation of Salmon Fishing Cooperative Associations or NIKKEIREN (which represent vessel owners of gill-net fishing ves-



Putting aboard and removing salmon from a gill net aboard a Japanese vessel in the North Pacific.

Japan (Contd.):

sels assigned to the salmon motherships) have agreed on the following policies concerning this year's mothership-type salmon operations in the North Pacific:

1. Each catcher vessel will carry not more than a total of 330 "tans" (unit of Japanese shackle about 180 feet long) and not more than 40 kilograms (88 pounds) of salt. (Editor's Note: Limit placed upon salt each catcher vessel can carry is apparently to restrict "home packs" of salted fish.)

2. Each vessel will carry not more than 165 "tans" of nets with knot-to-knot mesh size of 60 millimeters (about 2.4 inches) and not less than 165 "tans" of nets with knot-to-knot mesh sizes of 65 millimeters (about 2.6 inches).

3. Extra supplies of gill nets will be carried by the motherships. Transfer of nets from mothership to catcher vessel to replace lost nets will be conducted after approval for such transfer has been granted by the Fisheries Agency inspector aboard the mothership. Transfer of nets from mothership to catcher vessel in exchange for damaged nets will be conducted in the presence of the Fisheries Agency inspector on board the mothership.

4. When catcher vessels enter certain areas where the use of only 264 "tans" of gill net is authorized, the "extra" 66 units of gear carried by catcher vessels must absolutely not be used. (Shin Suisan Shimbun, May 14, 1962.)

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SALMON INDUSTRY'S VIEWS OF NORTH PACIFIC FISHERIES CONVENTION:

The Japanese periodical Suisan Keizai Shimbun of May 15, 1962, states that Japan will soon be in a position where it can withdraw from the International Convention for the High Seas Fisheries of the North Pacific Ocean (Japan, Canada, United States), if it wishes. The Japanese salmon industry hopes to formulate its position on this matter before the Japanese Government does, so that the will of the industry will be reflected in the Government's policy. For this reason, the salmon industry plans to form a committee about July this year to thoroughly study the Treaty problems confronting the salmon industry, as well as to consolidate views within the industry.

According to Suisan Keizai Shimbun, an organization called the Japan-U.S.-Canada Fisheries Treaty Study Society was formed in June last year. This Japanese group included fishery scientists and experts in international law from the Fisheries Agency, Foreign Ministry, and industry to study the Tripartite Treaty problems objectively from a scientific point of view. The Society is currently collecting and evaluating

facts relating to the circumstances leading to the conclusion of the Treaty and to the establishment of the abstenion line (175° W. longitude), which prohibits the Japanese from fishing east of that line, as well as the attitude of the United States at the time the Treaty was concluded. Based on biological and legal studies related to the abstenion line, the report is expected to include a study of the propriety of the provisional abstenion line from the standpoint of the Law of the Sea and points which Japan should be aware of in relation to that line. The Society plans to submit its findings and recommendations to the Japanese Government and to the fishing industry by the end of June this year.

The salmon industry plans to carefully study this report in determining its attitude regarding the Convention. Some members of the salmon industry feel that, instead of creating an independent committee to study the Tripartite revision problem, a committee should be formed to study the fishery problems of the Northern Waters (Okhotsk Sea, Bering Sea, and the North Pacific Ocean), and to include within that committee the special Japan-U.S.-Canada Fisheries Commission, which was organized to study fisheries problems relating to Japan and the Soviet Union.

Apparently, opinions within the Japanese salmon industry concerning revision of the Japan-U.S.-Canada Fisheries Treaty are divided into two groups: one group is urging a firm attitude, and the other favors adopting a moderate attitude. The National Federation of Salmon Fishing Cooperative Associations (NIKKEIREN), which is composed of owners of gill-net vessels assigned to salmon motherships, advocates a firm stand, claiming that the abstenion line is a disgrace upon Japan and must be removed by all means. NIKKEIREN feels that if Japan agrees to renew the present Treaty without any modification, it will exert an extremely adverse effect on negotiations to be held with the Russians, when the Japan-U.S.-Canada Fisheries Treaty expires four years hence. On the other hand, another group within the salmon industry supports a moderate stand, maintaining that Japan's insistence on eliminating the abstenion line might irritate the United States and Canada and result in those countries imposing severe import restrictions on Japanese canned fish products and frozen tuna. By and large, the opinion within the salmon industry supports abrogation of the present Treaty and renegotiation of a new treaty.

The Suisan Keizai Shimbun states that the Japanese Government hopes to formulate a provisional policy concerning the Tripartite Convention before the interim meeting of the International North Pacific Fisheries Commission convenes in August this year in Honolulu, taking into due consideration views prevailing within the Japanese salmon industry, the international fishery situation, and fishery resource problems. Should the three countries, Japan, Canada, and the United States, renegotiate a new treaty, the debates will most likely center around the problems of the abstenion line, species placed on the abstenion list, and admission of the Soviet Union to membership in the new treaty.

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FIRM EXPANDING FISH MEAL OPERATIONS OFF ANGOLA:

The Japanese fishing firm which conducted mothership-type fish-meal operations off Angola (for three months beginning in December 1961) is reported planning to expand its fishing operations off Angola. On May 16, 1962, the freezer ship Kaikai Maru (1,156 gross tons) was sent to Angolan waters. In advance of the Kaikai Maru, two dragners (Koshin Maru No. 1 and No. 2, each 120 gross tons) were dispatched to the Atlantic Ocean in early May. The dragners are scheduled to deliver their catches to the Kaikai Maru for freezing and processing.

Japan (Contd.):

The Kaikei Maru is to be replaced by the freezer ship Seiju Maru No. 3 (1,184 gross tons), which was scheduled to depart for the waters off Angola in mid-July. In addition to these two freezer ships, the firm is reported to be planning on dispatching a third freezer ship, Tosa Maru (2,000 gross tons), to the same waters.

Japanese fish-meal factory ship Renshin Maru.

The same firm as of May was operating two large fish meal factory ships in the eastern Bering Sea--the vessels Renshin Maru (14,094 gross tons) and the Kinyo Maru (9,373 gross tons). At the end of the Bering Sea fishing season in October, one of the two factory ships is scheduled to be sent to the waters off Angola on the west coast of Africa and the other to the waters off Mozambique on the east coast of Africa to conduct fish meal operations. (Suisan Tsushin, May 15, 1962.)

EXPORTS OF PRINCIPAL

CANNED FISHERY PRODUCTS, 1961:

Japanese exports of principal canned fishery products in 1961 were substantially lower than in 1960 both in quantity and value.

Product	1961		1960	
	Quantity	Value	Quantity	Value
	1,000 Cases	US\$ 1,000	1,000 Cases	US\$ 1,000
Salmon, trout . .	1,245	37,094	1,776	57,369
Tuna in oil . . .	1,436	10,205	1,340	8,921
" " brine . . .	2,207	19,181	2,034	16,397
Other tuna . . .	62	370	12	59
Mackerel	938	3,501	497	1,628
Mackerel-pike . .	405	2,187	1,045	5,786
Sardine	313	2,450	715	5,475
Crab	496	11,856	520	11,660
Oyster	431	2,941	363	2,543
Other fish	1,093	9,249	834	6,387
Total	8,626	99,034	9,136	116,224

Note: Based on Japanese Customs statistics.

Exports of salmon and trout, mackerel-pike, sardines, and crab meat were down in 1961.

EXPORTS OF SELECTED
FISHERY PRODUCTS, 1961:

According to statistics compiled by the Finance Ministry, Japanese exports of agricultural and fisheries products during 1961 amounted to US\$482,100,000--a decrease of 0.7 percent from the previous year. The main reason for the decrease was attributed to greatly decreased exports of canned salmon to Great Britain.

Due to the increase in demand in the United States and Europe, prices rose. Frozen tuna exports particularly increased.

Product	1961		1960	
	Metric Tons	US\$ 1,000	Metric Tons	US\$ 1,000
Frozen Fish:				
Tuna	137,962	39,621	132,020	35,347
Broadbill swordfish . .	9,625	6,650	7,988	5,336
Salmon and trout . . .	1,338	1,360	2,399	2,537
Fish meal	4,850	725	6,277	819
Pearls	61	35,787	54	30,480
	1,000 Cases	US\$ 1,000	1,000 Cases	US\$ 1,000
Canned:				
Salmon and trout . . .	1,260	37,094	1,776	57,369
Tuna	3,701	29,734	3,386	25,377
Mackerel	938	3,501	497	1,628
Mackerel-pike	405	2,187	1,045	5,786
Sardines	313	2,451	815	5,475
Horse mackerel	628	4,284	-	-
Crab meat	496	11,856	520	11,660

While canned salmon exports to Great Britain decreased, canned horse mackerel and mackerel exports increased. But exports of canned sardine and mackerel-pike were less due to a scarcity of fish. Steady demand in the United States caused canned tuna exports to increase somewhat and high export prices on canned crab meat prevented a decrease in the value of those exports. (Suisan Keizai Shinbun, May 9, 1962.)

JAPANESE FIRM SEEKS TO OPERATE
TRAWLER IN NORTH ATLANTIC:

A Japanese fisheries company, affiliated with a large Japanese fishing company, is reported to be seeking the Fisheries Agency's permission to operate a 2,000-ton trawler in the North Atlantic Ocean. The company hopes to export its catches to Denmark, but the Fisheries Agency has shown very little enthusiasm for the plan. The Agency feels that expansion of Japanese fishing operations into the North Atlantic where many European nations are engaged in fishing may create international problems, according to a translation from the Japanese periodical Shin Suisan Shinbun, April 23, 1962.)

Japan (Contd.):

GOVERNMENT TO PROTEST SEIZURE OF FISHING VESSELS OFF ALASKA:

A Japanese press report dated May 7, 1962, states that the Japanese Government is expected to lodge a protest with the United States Government against the seizure by Alaskan State authorities of the two Japanese fishing vessels, Ohtori Maru No. 5 and Shoichi Maru No. 7. The two fishing vessels, belonging to the Banshu Maru No. 31 mother-ship fleet, were fishing for herring in the Shelikof Strait when seized.



Typical Japanese trawler that operates together with a mothership.

The Japanese Government intends to protest the seizure of the two fishing vessels based on the fact that Japan does not recognize the State of Alaska's claim over certain waters and that the seizure was contrary to the principle of freedom of the high seas. According to the report submitted to the Fisheries Agency by the company which operated the seized fishing vessels, the Banshu Maru No. 31, mothership of the fleet, definitely did not violate United States territorial waters, but the two seized vessels, Ohtori Maru No. 5 and Shoichi Maru No. 7, may have done so.

Validity of the State of Alaska's claim that certain waters are inland waters will not be known until the trial involving the seizure of the Japanese fishing vessels is held. The trial was originally scheduled for early May. The Fisheries Agency expects this matter to be settled by the end of October 1962. If it is established that United States territorial waters were violated, then the company operating the vessels is expected to pay a fine.

The two captains of the seized vessels and the captain of the mothership who were arrested have been released on bail. For their trial, the Japanese company expects to have

a Government-appointed lawyer represent them. (Shin Suisan Shimbun Sokuho, May 2; Suisan Tsushin, May 7, 1962.)

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FISHING ACTIVITIES IN BERING SEA:

A trawler fleet, consisting of the mother-ship Seifu Maru (8,269 gross tons), 28 catcher vessels, and the refrigerated carrier vessel Fuku Maru No. 7, departed for the Bering Sea fishing grounds. This year the Seifu Maru's processing and freezing capacities were increased and the number of catcher vessels assigned to it was increased by 6 vessels to a total of 28 vessels, compared with 22 vessels last year. The 28 catcher vessels, led by the refrigerated carrier, departed from Kushiro, Hokkaido, on May 3, 1962, and expected to rendezvous in the Bering Sea with the mother-ship, which departed Hakodate, Hokkaido, on May 9. (Suisan Tsushin, May 11, 1962.)



Typical catch aboard a Japanese trawler in the Bering Sea.

The bottomfish factoryship Shikishima Maru (10,100 gross tons) departed Hakodate, Hokkaido, for the Bering Sea on May 14, accompanied by one large and 16 small trawlers. Catch target for this fleet is 25,000 metric tons of fish. (Shin Suisan Shimbun Sokuho, May 9, 1962.)

The shrimp factoryship Einin Maru (7,482 gross tons) which departed Yokosuka on April 19, is now operating in the waters north of the Pribilof Islands. The Einin Maru's production since early May totaled approximately 20,000 cases of canned shrimp. (Shin Suisan Shimbun Sokuho, May 15, 1962.)

The Japanese fishing vessel Ao Maru (365 gross tons), which arrived in the Olyutorski

Japan (Contd.):

area in late April, reports that halibut fishing is good. The Ao Maru is reported to be fishing southeast of Cape Olyutorski along 60° N. latitude, according to a translation from the Japanese periodical Suisan Keizai Chimbun, May 15, 1962.

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JAPANESE MINISTER DISCUSSES KELP UTILIZATION WITH PREMIER KHRUSHCHEV:

Japanese Minister of Agriculture and Forestry Kono, who visited Moscow early in May 1962 to break the deadlock at the sixth International Northwest Pacific Fisheries Commission meeting, met Soviet Premier Khrushchev at the Kremlin on May 7. During this meeting, Minister Kono reportedly brought up the question of utilizing kelp found in the waters off Habomae and Shikotan in the Kurile Islands (now under Soviet jurisdiction). Hoping to conclude an agreement which would permit Japan to utilize this marine product, Minister Kono pointed out the fact that the Soviet Union has very little use for kelp, whereas in Japan its use is very extensive.

Both parties are reported to have reached an agreement in principle, but the Soviet leader is said to have expressed concern over the possibility of intelligence activities being conducted on the pretext of harvesting kelp. To this, Minister Kono reportedly proposed the institution of some kind of system, such as a license system, requiring Japanese vessels to purchase licenses to operate in the areas near the above-mentioned islands. Implementation of this agreement will mean that Japanese coastal fishermen, who have always been confronted with the problem of having their vessels seized by the Russians, can operate in safety. (Nippon Suisan Shimbun, May 9, 1962.)

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FISHING COMPANIES INTERESTED IN BUILDING FISH SAUSAGE PLANTS ABROAD:

Several large Japanese fishing companies are reported to be planning on establishing fish sausage plants in foreign countries. One of them has been working since 1961 with a plan to establish a fish sausage plant (daily production capacity: 50,000 sausages) at Curacao (an island belonging to the Netherlands) in the Caribbean Sea. In addition to this company, another large fishing company

is said to be contemplating construction of a sausage plant in Brazil. Another large fishing company is currently surveying Guatemala in Central America and Ghana in Africa with a view to constructing fish sausage plants in those countries.

Marketing studies conducted by the companies reveal that many countries in Africa, South America, and Southeast Asia prefer low-priced sausages. Fish-sausage sampling programs were conducted in those areas and the products were well received, indicating that the overseas expansion of the Japanese fish sausage industry should prove successful. (Suisan Tsushin, May 1, 1962.)



Republic of Korea

FIRM OBTAINS LOAN TO BUILD SIX TUNA VESSELS:

The South Korean firm, which presently is operating two tuna vessels out of American Samoa under contract to the large United States tuna packing company which operates a tuna cannery in that Island, has obtained a foreign loan of US\$820,000 to build six 120-ton tuna vessels. This was according to a report in a South Korean publication. Source of this loan has not been disclosed. It is not yet known whether orders for the construction of the six vessels will be placed with Japan. The six tuna vessels are expected to be dispatched to Samoa upon their completion.

The South Korean firm is reported to own an additional 3 distant-water tuna vessels besides the two operating out of Samoa. Completion of the six tuna vessels will increase the company's tuna fleet to a total of 11 vessels.

Reportedly, the United States firm operating the cannery in American Samoa is arranging to have South Korean fishing vessels deliver tuna to its cannery inasmuch as the catch quota of 12,000 short tons placed by the Japanese Government upon the Japanese tuna vessels delivering tuna to Samoa is inadequate to permit maximum use of its Samoan canning facilities. (Suisan Tsushin, May 21, 1962.)

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ITALIAN PROPOSAL TO EXPAND KOREA'S FISHING FLEET:

Early in February 1962 the Government of the Republic of Korea announced preliminary

Republic of Korea (Contd.):

agreement to a proposal by private Italian ship-building interests to grant a loan in the amount of US\$100,000,000 for expanding and further developing Korea's fishing fleet. The proposal would add some 120,000 gross tons of modern fishing vessels, part to be constructed in Italian shipyards and part to be constructed in Korean shipyards using materials and equipment to be supplied by the Italian interests. As originally proposed the vessels would be supplied or constructed over a 3-year period and the loan would be payable in 6 to 7 years at 6 percent interest. Korean fishery agencies have been given major responsibility for developing a utilization plan and an implementation program and coordinating these with the fisheries part of the over-all 5-year economic development program previously announced by the military government.

Some part of the order for constructing fishing vessels in Italian shipyards could conceivably be insured under Italy's Martinelli Law. If it were to be so insured, it would then be eligible for financing at a reduced rate of interest. The problem is that the annual insurance ceiling under the Martinelli Law (presently \$240 million of export contracts in any one year) is incapable of handling an export of this magnitude in view of other competing export contracts, and that any insurance coverage under the Martinelli Law for this order would have to be approved by the Italian Government. No indication has been made in Rome of the Italian Government's attitude toward this proposed contract nor whether it would try to secure the Parliamentary approval necessary to raise the insurance ceiling to handle this contract. If the contract is not insured under the Martinelli Law, higher cost and less comprehensive private insurance and ordinary commercial financing at a much higher rate of interest (in excess of 7 percent) would have to be found. What effect this might have on the prospects for the contract is presently unknown. (Reports of April 24, 1962, from Seoul and April 17, 1962, from Rome.)

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FISHING COOPERATIVES:

A Fisheries Cooperative Law (Law No. 1013) was promulgated on January 20, 1962. It abolishes the previous system of fishing organizations and authorizes the establish-

ment of fishing cooperatives by local areas and by major methods of fishing, fisheries manufacturer's cooperatives, and a Central Association of Fisheries Cooperatives. Major difference between the new organizations and the fishing guilds are that membership is voluntary and requires individual investment, and a greater scope of functions, including fishery credit activities, may be performed. While providing a somewhat greater degree of self-determination, the cooperative organization will still be under quite complete Government control.



Malagasy Republic

FISHERY AGREEMENT WITH REPUBLIC OF CHINA BEING CONSIDERED:

The Malagasy Government is presently considering a draft fisheries cooperation agreement with the Republic of China. The proposal, suggested during the President of Malagasy's April visit to Taiwan, would replace the cooperation agreement between the two countries made in the third quarter of 1961.

According to the new proposal, which was drafted by the China Fishery Corporation, four 120-ton fishing vessels belonging to the Corporation would operate for training purposes in Malagasy territorial waters. If successful, additional vessels would be sent. The Malagasy Government would provide the fishing base for the fleet. Part of the catch would be sold to local canneries and the balance exported. Any profits would be shared. (United States Embassy, Taipei, report of May 11, 1962.)



Malaya

FROZEN TUNA TRANSHIPMENTS TO UNITED STATES FROM PENANG BASE:

The Japanese Overseas Fisheries Company, which manages the joint Japanese-Malayan tuna-packing plant at Penang, Malaya, has begun to accept shipments of fresh and frozen tuna for transshipment to the United States. In April 1962, 200 tons of frozen tuna of a total of 320 tons landed at Penang were transshipped to the United States through a Japanese exporting firm, and the remainder shipped to Japan because they were unsuitable for export.

Malaya (Contd.):

Tuna vessels that were expected to return to Penang late in May were the Seishu Maru No. 1 (308 gross tons) and the Hoyo Maru (280 gross tons), both belonging to the Mie (Prefecture) Tuna Cooperative Association. In early August, the Seiju Maru No. 5 (340 gross tons), Seishu Maru No. 2 (409 gross tons), Chosho Maru No. 3 (340 gross tons), Kotoshiro Maru No. 11 (354 gross tons), and the Seishu Maru No. 11 (314 gross tons) are expected to return to Penang, each with 200-300 tons of frozen tuna. In addition, 2 or 3 other vessels were expected to bring fish in to Penang in May, and 3 or 4 in June. Besides the mentioned vessels, other fishing vessels known to be fishing for the Penang base are Kompira Maru No. 1 (240 gross tons), Kinei Maru No. 3 (226 gross tons), and Zuiho Maru No. 11 (180 gross tons).

The Malayan plant reportedly is purchasing tuna from the fishing vessels at prices averaging 100-120 yen per kilogram (US\$252-302 per short ton) for unsorted frozen fish and 85 yen per kilogram (\$214 per short ton) for fresh fish. To supply the Penang base with fresh tuna for freezing and transshipment to the United States, the Fuku Maru No. 2 (200 gross tons), which was on its way to the fishing grounds in the Indian Ocean, was expected to bring in its first load of fresh tuna in June. (Shin Suisan Shimbun Sokuho, May 8, 1962.)

Editor's Note: The Overseas Company was authorized by the Fisheries Agency on April 18 to permit landings at Penang of 6,000 short tons of fresh tuna for freezing at the tuna-packing plant's shore facilities in Penang for transshipment to the United States. The Fisheries Agency also authorized on the same day a quota of 4,000 short tons of Indian Ocean frozen tuna for transshipment to the United States from either Penang or Singapore.

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EX-VESSEL TUNA PRICES
AT PENANG:

The following ex-vessel tuna prices were paid in May 1962 at Penang by the Overseas Fisheries Company, which operates the joint Japanese-Malayan tuna-packing company at Penang (for fish described as second class, i.e., not in prime condition), according to a translation from the Japanese periodical Shin Suisan Shimbun Sokuho, May 31, 1962.

Product	Price	
	Yen/Kg.	US\$/Short Ton
Clipper-caught fish:		
Albacore	130	328
Yellowfin (gilled & gutted):		
20 to 100 lbs.	110	277
100 to 120 lbs.	100	252
Big-eyed fillets	100	252
Iced fish:		
Albacore	106	267
Yellowfin (gilled & gutted):		
20 to 100 lbs.	100	252
Big-eyed (gilled & gutted):		
Over 40 lbs.	70	176



Mauritania

SPINY LOBSTER INDUSTRY:

The spiny lobster season: (a) green lobster (Palinurus regius) netted along Rio de Oro coast, June, July, August, and September; (b) red lobster (Palinurus mauritanicus), netted from small fishing boats or taken by lobster trap in depths from 30 to 100 meters (98 to 328 feet) from October until June, especially November-January, and March-May.

Mauritania's Exports of Spiny Lobsters, 1959-1961				
Year	Live		Frozen	
	Red	Green	Tails	
		(Metric Tons)		
1961	955	228	783	
1960	661	311	670	
1959	232	347	373	

The catch of spiny lobster was 1,650 metric tons in 1959, 3,100 tons in 1960, and 3,500 tons in 1961. There is no shrimp fishing in Mauritania. (United States Embassy, Dakar, May 2, 1962.)



Mexico

SHRIMP LANDINGS, 1961:

The 1961 shrimp landings (heads-on or live-weight basis) in Mexico were probably about 74,000 metric tons—an increase of about 9 percent over 1960 landings. This makes four record years in a row for Mexican shrimp landings. As

Mexican Shrimp Landings by Areas, 1958-61				
Area	1/1961	1960	1959	1958
	.. (Metric Tons, heads-on weight) ..			
West Coast	50,836.5	50,614.6	44,233.8	36,197.2
East Coast	14,878.2	17,372.0	16,803.3	16,073.3
Total	65,714.7	67,986.6	61,037.1	52,270.5
Percentage landed on				
West Coast	77.4	74.4	72.5	69.2

1/ Eleven months January-November. Preliminary data subject to revision.

Mexico (Contd.):

in the previous three years, the latest increase also came from Mexico's west coast. The east coast landings have remained relatively stable since 1958 whereas those from the west coast have risen from 36,000 metric tons in 1958 to about an estimated 57,000 tons in 1961. At least three-fourths of Mexico's shrimp landings in 1961 were on the west coast. Shrimp probably accounted for about 40 percent of the 1961 total landings (live-weight basis) of edible fishery products.

Sinaloa in 1961 was the leading shrimp-producing State in Mexico, followed by Sonora, and Campeche. In 1960 Campeche outranked Sonora. (United States Embassy, Mexico, April 24, 1962.)



Morocco

FISHERY TRENDS, FIRST QUARTER 1962:

Fishery developments in Morocco during the first quarter of 1962 include the following:

1. Announcement by the Minister of Finance and National Economy of the Government's intent to build a plant to manufacture fish flour for human consumption with a capacity capable of producing 700 tons in the first year.

2. The sales agency for Moroccan canned sardines (UCIC) planned to send two persons to the United States in May to explore the possibilities of increasing sales in the United States market.

3. The Government has informed the sardine canners association that the Government will allocate the 600,000-case duty-free quota for imports by France. One of the criteria in the allocation will be the degree of "Moroccanization."

Exports of canned fish for the annual season from June 1961 through January 1962 were 1.87 million cases, the highest figure on record. Sardines accounted for 1.46 million cases, slightly below the previous year's 1.53 million cases, the highest year ever recorded. Tuna at 159,000 cases and "other fish" (chiefly mackerel) at 249,000 cases both hit new highs over a ten-year period.

The franc zone took 47 percent of the total exports--a drop from the monthly average established earlier in the year. This indicated that the free-quota limit for French imports had almost been reached (557,000 cases had been shipped out of the 600,000 quota). (United States Embassy, Rabat, report of May 2, 1962.)



Netherlands

FINAL RESULTS OF ANTARCTIC WHALING EXPEDITION:

The management of the Netherlands Whaling Company has released final figures on the catch of the Netherlands whaling expedition which operated in the Antarctic, headed by the whaling factory ship Willem Barendsz. The expedition terminated its hunting on April 15, 1962.

Netherlands Whaling Company Operations in Antarctic, 1961/62 and 1960/61 Seasons		
Product	1961/62 Season	1960/61 Season
Whale oil	72,648 barrels (12,155 metric tons)	129,526 barrels (21,588 metric tons)
Sperm oil	17,440 barrels (2,918 metric tons)	10,248 barrels (1,708 metric tons)
Meat meal	1,726 metric tons	3,947 metric tons
Frozen meat . . .	1,582 metric tons	2,692 metric tons
Meat for Japanese refrigerator ships	7,932 metric tons	5,187 metric tons

In 1961 the catch started on December 12, while during the previous season the catch started on November 28, 1960, and ended on April 6, 1961. (United States Consulate, Amsterdam, report of April 18, 1962.)

Note: See Commercial Fisheries Review, August 1961, p. 80.



Nicaragua

SHRIMP INDUSTRY TRENDS, FIRST QUARTER 1962:

The Pacific Coast port of Corinto continued to be the major fishing port during the first quarter of 1962. A large United States fishery firm operating out of that port has been harvesting shrimp at the rate of 200,000 pounds per month. The company's freezing and packing plant, representing an investment of US\$400,000, will soon be completed.

Smaller operations, primarily for shrimp, are being conducted at Puerto Somoza (also on the west coast) and at El Bluff (on the east coast) by two Nicaraguan firms. The El Bluff operation on the east coast is on the upswing as ten shrimp vessels are fishing and more are scheduled to arrive in July.

A company on Corn Island continues to catch and ship substantial quantities of lobsters. (United States Embassy, Managua, April 30, 1962.)

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Nicaragua (Contd.):

**SHRIMP AND LOBSTER FISHERY
TRENDS ON ATLANTIC COAST:**

Shrimp: The Nicaraguan shrimp firm in El Bluff on the Atlantic as of May 1962 continued to operate at considerably less than full plant capacity. The catch has been averaging about 100,000 pounds per month, and while there is no immediate expectation of rapid improvement, company activities appear to be stabilized on a basis that will permit continued operation of the plant.

A managerial shake-up earlier this year prompted by the accumulated complaints of creditors resulted in the ousting of the majority stockholder from his position as general manager. Officers of the Banco Nicaraguense are directing company operations. United States fishermen working out of El Bluff report that the present management is doing a more capable job than did the previous one but that it is unwilling, or unable, to spend the sums that would be needed to correct faults of the plant as originally constructed.

The El Bluff firm has almost no working capital and for this reason is now buying shrimp only from bay fishermen for sale in the Nicaraguan market. The preponderant part of the shrimp are caught by United States fishing vessels in coastal waters, and for these the firm acts only as a processor. An exiled Cuban purchases the shrimp from the trawlers, pays the firm to do the processing, and charts a boat to carry the frozen shrimp to New Orleans. The same Cuban operates five lobster boats which fish in the waters around the Corn Islands, but bring the catch to the El Bluff firm for processing. The firm would like to again purchase shrimp on a large scale, but will not be able to do this until such time as more working capital becomes available. No prospects of this are in sight.

As of May 1962 eight shrimp vessels from the United States were working out of El Bluff. Until March, the average catch per boat per month was over 14,000 pounds and the total amount processed monthly by the firm was slightly above 100,000 pounds. The majority of the shrimp caught are in the size groups of 21-25 and 25-30 count. With the temporary disappearance of the white shrimp, production had declined in May, but it was expected to revive again in July or August.

The El Bluff firm would like to attract more United States fishing vessels to El Bluff, but the present set-up would appear to place severe restrictions on the number of vessels that can be handled. Even with only eight vessels working, unnecessarily long delays in port have been reported. The company hopes to be able to lease additional wharf space from the Customs Authorities in El Bluff. Present freezing capacity of 12,000 pounds per day could be increased if conditions warranted it.

Corn Island Spiny Lobster Fishing: A Corn Island firm is exporting each month about 10,000 pounds of frozen spiny lobster tails to New York City via Panama. Earlier difficulties with the Government have largely ended and the company anticipates continued profitable operation. The other Corn Island company, after only two weeks of operation, closed late last year, and there is no expectation that it will reopen soon. As mentioned above, lobster vessels working out of El Bluff and the El Bluff plant also fish off the Corn Islands.

Dried Shrimp: An American is reported to be drying shrimp at Puerto Cabezas for export to the United States. Shrimp are bought from local bay and lagoon fishermen. A similar operation continues at Pearl Lagoon north of Bluefields. (United States Embassy, Managua, report of May 18, 1962.)

**Norway****FISH-FREEZING PLANTS SALES, 1961:**

Some 90 Norwegian fish-freezing plants now belong to the joint sales organization Norsk Frossenfisk A/L. The products produced by the members are sold under one brand name and are distributed in 25 foreign countries. In 1961, the sales organization sold over 32,000 metric tons of frozen fish, valued at about Kr.110 million (US\$15.4 million). This includes about 25,000 tons of fish filets as against about 7,000 tons sold by Findus A/S, the other Norwegian sales organization.

For the first four months of 1962 sales of Norsk Frossenfisk were 45 percent ahead of 1961. The Chairman of the Board of Directors of the sales organization observed that, in his opinion, a further expansion of Norway's frozen fish export is not primarily a question of capital. The affiliated freezing plants have a combined annual capacity of some 100,000 tons. Due to the inadequate supply of raw material, less than half of that capacity is utilized. Thus, it should not be necessary to spend a lot of money on new production facilities. The sales organization has a distribution system in all major countries which conceivably could use more Norwegian frozen fish, said the Chairman. (News of Norway, May 31, 1962, of the Norwegian Information Service.)

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**THREE-NATION FIRM TO TAKE OVER
FISH FREEZING PLANT IN
NORTH NORWAY:**

An agreement on establishment of a Norwegian-Swedish-Swiss corporation, to take over and greatly expand operations of the North Norway fish deep-freezing firm A/S findus, was announced in Oslo early in May 1962. The new Findus International S/A, to have its headquarters in Switzerland, has been formed by the Norwegian company A/S Freia--parent company of A/S Findus, the Swedish A/B Maribou in which Freia owns a majority interest, and the world-wide Swiss concern Nestle, with the latter as main stockholder. With a capital stock of Swiss francs 175 million (US\$40.4 million), Findus International will engage in production and sales of all types of frozen foods. It will take over all activities now conducted by A/S Findus in Norway, Sweden, Denmark, Great Britain, and other countries. Transfer of Freia and Maribou-owned shares from A/S Findus to Findus International S/A will require the approval of Norwegian authorities.

The president and managing director of A/S Freia stated at a press conference in Oslo that the Findus fish filleting and freezing plant at Hammerfest will be the pilot plant for greatly expanded operations. The present processing capacity, which runs about 25,000 metric tons a year, will be merely a modest beginning. As soon as possible, efforts will be made to obtain additional supplies of raw material. In an interview with Arbeiderbladet, he said that consideration of

Norway (Contd.):

relations between the two European trade areas had not been of decisive importance in evaluating prospects for Findus International. He disclosed that Freia and its Swedish subsidiary, with 20 percent of the capital stock in the new company, will have 2 of the 5 members on the Board of Directors. The various foreign subsidiaries of A/S Findus will retain their present status. And its Hammerfest plant will continue under Norwegian management.

Findus International figures on investing the equivalent of about Kr. 600 million (US\$84 million) to expand facilities for production and distribution of frozen foods. A part of this amount will be allocated to fish processing. If the per capita consumption of fish in Western Europe could be raised to the same level as in Scandinavia, approximately 2.2 pounds a year, he predicted that the Norwegian fishing industry would have a difficult time meeting the demand.

News of the establishment of Findus International was greeted with mixed feelings in North Norway. The Chairman of the Norwegian Fisherman's Association told Arbeiderbladet that he read the newspaper reports with considerable concern. In his considered opinion, the plan could lead to monopoly control of fish buying in Finnmark. Rep. John Olsen, who is chairman of the Norwegian Parliament's Fisheries Committee, said that if foreign capital was needed to expand Norway's fishing industry, he would rather that it be obtained through cooperation with Sweden.

A different view was expressed by the director of the District Development Fund. Generally speaking, he opined that in the long run it was not possible to maintain a satisfactory level of economic activity in North Norway without expansion of the fishing industry. And that, he suggested, could best be achieved through a division of labor between several countries. He welcomed hints that Findus International would contract for deliveries from other plants. If small plants could be drawn into the production by supplying black-frozen fish for further processing, this would be of great importance, he said.

The vice chairman of Frionor, by far Norway's largest producer and exporter of frozen fish, said the cooperative sales organization will have to prepare for sharper competition, both in regard to the supply of raw material and sales in foreign markets. With a chain of associated freezing plants along the coast, Frionor is in a fairly good position. The organization has also established a number of foreign subsidiaries. And for distribution of Frionor fish products in the Netherlands, Belgium, and Luxembourg, it has a co-operative arrangement with a large Dutch packing firm. But to meet competition from Findus International, Frionor will need more funds for sales promotion, he declared. (News of Norway, Norwegian Information Service, May 10, 1962.)

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PROHIBITION URGED ON FOREIGN FISHERY LANDINGS AND PROCESSING:

A seven-member Norwegian Government appointed committee has urged that present regulations be tightened to prohibit foreign fishing operators from landing fish for sale in Norway, regardless of what type of gear they might use. According to recommendations outlined in the 81-page Committee report, the Government would be authorized to make exceptions if necessary to assure steady employment and sales, provided it would not hurt Norwegian fisheries. Exemptions should be limited to specific fish species, specific districts, specific periods, and specific

uses. Catches from wrecked fishing craft would also be exempted.

Under the recommendations, foreigners would not be permitted to process, package, or reload fish or fish products inside Norway's fishing zone. Six of the committee members would also deny Norwegian firms the right to sign agreements on contract processing for foreign fishing operators. One dissenting member would permit contract processing of herring and mackerel south of Bergen.

In the Committee's opinion, the superior quality of Norwegian fish and fish products should offer good prospects for maintaining exports, despite stiff competition in foreign markets. The main problem is to supply sufficient raw material for the frozen fish industry. Acquisition of more ocean-fishing vessels and development of better transportation facilities should enable Norwegian fishermen to meet the demand. Landing fish from foreign vessels should be permitted only in emergencies, says the Committee. (Norwegian News of Norway, May 24, 1962.)

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FIRM TO PRODUCE FISH FLOUR:

Fish protein concentrate or fish flour suitable for human consumption will be produced on a trial basis at a new plant in Tjaereviken, near Bergen. The process has been developed by scientists at the Norwegian Fishery Directorate's Chemical-Technical Research Institute.

Initially, the fish flour produced will be tested on calves and other sensitive animals. (News of Norway, Norwegian Information Service, May 10, 1962.)

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HERRING AND COD FISHERIES TRENDS:

Altogether 38,160 metric tons of cod were landed in this year's Lofoten fishery, as compared with over 41,000 tons in the 1961 season. Estimated first-hand value of the 1962 catch was about Kr. 40 million (US\$5.6 million). Some fishermen finished up with shares ranging from Kr. 10,000-15,000 (\$1,400-2,100), while others had far less to show for their hard work.

The winter herring fishery, off the Norwegian west coast, was also disappointing. Final

Norway (Contd.):

reports on the results show that the total catch was less than 90,000 tons, with a first-hand value of about Kr. 30 million (\$4.2 million). This was not much of an improvement over the 1961 winter herring season which set an all-time low with a total catch of some 74,000 tons, worth about Kr. 24.7 million (\$3.5 million). The 1962 catch was actually the second smallest since 1908. (News of Norway, May 10, 1962.)



Peru

FISH OIL INDUSTRY TRENDS:

The Fisheries Service of the Ministry of Agriculture calculates that there were 114 fish meal plants in Peru at the end of 1961, 101 of which produced crude fish oil as a result of the fish meal reduction process. These plants are of different sizes and degrees of efficiency, and the equipment they use is as varied as the number of plants operating. The large expansion of Peruvian fish oil production noted in 1961 is attributable to the following: increase in the number of reduction plants; enlargement of individual oil plant capacities; and improved machinery installations (largely Swedish) by numerous plants.

Only 10 producers of crude fish oil are prepared to handle refined oil for sale for domestic consumption and export. One of these, which is among the largest companies, does not have its own refining facilities, but has an arrangement with one of the nine existing refineries for converting its crude oil into the refined product. Somewhat at variance with the report from Copenhagen that plant operators are

working on a proposal to pay refiners for refining services and to market the oil themselves, was a statement made by the managing director of a large fish meal firm in Lima about the existing situation. He said many of the Peruvian producers of crude oil depend upon income from their sales of crude oil to the refineries for paying current expenses, including wages. Therefore, the majority of them would not be interested in changing the present system of selling their oil to refiners for one which would subject them to the vagaries of the international market and unduly delay their receipts from crude oil sales. Under the present system, the refiners assume the risks of the market.

The ten refiners in Peru formed an informal fish oil refiners committee in June 1961. There is only a "gentlemen's" or "verbal" agreement among them, no other form of organization. One of the advantages of the informal group is that its members are in a position to achieve savings in freight costs through the pooling of shipments and the chartering of tankers. Freight costs are \$16 per metric ton for refined fish oil shipped to European ports in regularly scheduled shipping conference vessels, but the rate is \$10 per ton in chartered tankers carrying 15,000 tons.

Another advantage the refiners' group has is the opportunity given its members to determine and maintain the price of their product. The chairman of the group suggested US\$140 per ton (6.3 cents a pound) as a reasonable price for refined oil, c.i.f. continental European ports. A year ago, the Peruvian price c.i.f. European ports was \$132-\$133 per ton (about 6 cents a pound). Peruvian refiners as of April 1962, agreed among themselves not to sell at less than \$117.50 a ton (5.3 cents a pound) c.i.f. continental ports. At that price no sales were being made in April for future delivery. There appeared to be some concern that the Peruvian fish oil refiners will experience financial losses, since they are obligated to continue their purchases from crude oil producers, and they will continue refining and storing the product. The stocks in storage in April 1962 were said to be less than 10,000 metric tons.

A further sharp increase in Peruvian fish oil production is predicted for 1962 by some, but the chairman of the refiners group doubted that Peru's 1962 production would surpass that of last year. This he attributed to the fact that expansion plans are being held in abeyance for the present because of the existing world-wide fish oil situation and of the Peruvian political situation. There was a tendency to defer major expenditures until after the national elections, scheduled for June 10, 1962.

Peru's exports of fish oil (refined): Official statistics (table 1) show Peru's exports of fish oil in 1960 to have been 35,003 metric tons and 102,306 metric tons in 1961, an increase of 192.3 percent. The export value was \$9.2 million soles (\$3.7 million) in 1960 and 290.8 million soles (\$10.9 million) in 1961, an increase of 193.1 percent.



Table 1 - Peru's Exports of Fish Oil (Refined) by Destination, 1960

Destination	1960		
	Metric Tons	S/1,000	US\$ 1,000
Belgium	40.0	126.5	4.7
Denmark	7,302.6	18,615.6	695.7
France	392.6	1,239.3	46.3
Germany	10,635.0	30,887.3	1,154.2
Italy	315.3	811.4	30.3
Netherlands	14,918.7	43,848.3	1,638.6
Norway	854.2	2,113.0	79.0
Sweden	544.5	1,521.9	56.9
Total	35,002.9	99,163.3	3,705.7

Note: Values converted at rate of 26.76 soles equal US\$1.

For 1961, data collected by the National Fisheries Society (table 2) show Peru's fish oil exports to have been 98,083 metric tons, just 4,218 metric tons less than the official figure provided by the Statistical Department of the Callao Customhouse.

Peru (Contd.):

Table 2 - Peru's Exports of Fish Oil (Refined) by Destination, 1961

Destination	Qty. Metric Tons
Denmark	14,622
Germany	17,687
Netherlands	43,268
Norway	12,435
United States	825
Others	9,251
Total	98,088

There are no Government subsidies or other concessions applicable to the production or exportation of fish oil (or other fishery products), according to a United States Embassy, Lima, April 18, 1962, report.

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FISH MEAL AND OIL INDUSTRY TRENDS, FIRST QUARTER 1962:

In February 1962, the Consorcio Pesquero del Peru S.A., (marketing organization for fish meal producers) completed one year of operation. There can be little doubt that this co-operative marketing organization, with 92 member companies representing 93 percent of Peru's fish meal production, is a primary factor in the stability which has characterized the Peruvian fish meal industry since the Consortium began operations in February 1961. The magnitude of its operations is clear when it is noted that Peru's exports of fish meal approach a value of US\$50 million annually.

Peru has retained its rank as primary world producer of fish meal and continues to be accorded a quota equal to 60 percent of the world market by the Fish Meal Exporters' Organization. At the beginning of 1961, total world demand was estimated at one million metric tons, and Peru's quota was set at 600,000 tons. However, the total world demand for that year was closer to 1,250,000 tons and each country's quota was raised accordingly. Since some of the supplying countries could not fill their quotas, the unfilled allotments were divided between South Africa and Peru. By the end of the year, Peru's 1961 quota had risen to 750,000 tons. Official figures for 1961 show exports of 708,366 tons, valued at 1,328.6 million soles (\$49.6 million), compared with 507,042 tons in 1960, valued at 1,056.4 million soles (\$38.7 million). If world demand for 1962 approaches the figure mentioned recently of 1,350,000 tons, Peru's 60 percent quota would exceed 800,000 tons.

Data are not yet available on Peru's production or exports during the first three months of 1962. It is expected, however, that many plants were not able to maintain production during the period, which normally includes the best months for anchoveta (anchovy) because fishing was bad during that period in many places. Intermittent strikes of fishermen, bad weather, and the compulsory closing of most of the plants in the Lima-Callao area for at least a week in February for failure to install deodorizing equipment, no doubt contributed to a production lag which may be difficult to overcome. There was a report in mid-February that the Consortium had refused new orders, since those on hand would take all available supplies. As of April 1962, Peru's fish meal production for 1962 was estimated by the Consortium at one million tons, of which 750,000 tons would be for export.

The very substantial 192.2 percent increase in fish oil exports in 1961 (102,306 tons) compared with 1960 (35,003 tons) was an interesting development of the fisheries industry in recent months. A condition of overproduction has assailed the world market, however, and prices have dropped considerably. Ten Peruvian refiners of fish oil, members of an in-

formal group which buys crude oil and refines it for export, have agreed not to sell at less than \$117.50 (5.3 U.S. cents a pound) c.i.f., continental European ports. During the first quarter of 1962, it was reported that Peruvian refiners were making no sales at that price for future delivery, and there seemed to be concern that the refiners would experience financial losses. They are obligated to continue purchasing the crude oil, a byproduct of the fish meal reduction process in practically every fish meal plant in Peru, and to refine and store it. It was understood that Peruvian fish oil refiners expected to attend an international meeting of producers in Europe at the end of May, perhaps looking to the establishment of some sort of international organization similar to that in the fish-meal industry (the International Association of Fish Meal Manufacturers).

An interesting comment was made by an individual whose work at sea in the fisheries industry of Peru over a period of several years would seem to place him in a position to make a knowledgeable observation about the general situation. He said that, at the present rate of fishing (apparently meaning all types of fish, including anchoveta and tuna), there would be no fish at all in those waters within a few years, unless some form of conservation was instituted. Fishing this year, he said, is not ahead of last year, the tuna now being taken are much smaller than formerly, and fewer birds are being seen now because there is not enough food for them. (United States Embassy, Lima, report of April 30, 1962.)



Philippines

JOINT JAPANESE-PHILIPPINE TUNA ENTERPRISE TO BE FORMED:

A Japanese fishing company, located in the city of Kesennuma in northern Japan, has accepted the offer from a company of the Philippine Islands (a firm engaged in the loans and insurance business) to participate in a joint tuna venture in the Philippines. The president of the Japanese firm went to Manila on April 16, 1962, for preliminary discussions and a representative from the Philippine company was expected in Japan, at which time the agreement between the two companies was expected to be signed.

The joint tuna base reportedly is to be established on Coron Island, located nearby Manila, with a capital of 200 million yen (US\$556,000). The Japanese company will invest 40 percent and the Philippine company 60 percent. The Japanese company plans to invest three tuna vessels, one of 200 tons gross and another of 150 tons gross, and one 85-ton converted tuna vessel which will engage in year-round fishing for tuna, deep-sea bass, and Spanish mackerel in the waters around Manila, Hong Kong, and Singapore.

The Coron Island base, which is now equipped with an ice plant capable of manufacturing 5 tons of ice per day, a 5-ton freezer plant, and a small cannery, is expected to be ex-

Philippines (Contd.):

panded if the joint enterprise proves successful. (Suisan Tsushin, May 10, 1962.)



Poland

MARINE FISHERIES TRENDS:

Landings, 1961: The Polish fishery plan for 1961 provided for a production of 173,268 metric tons of fish. The actual catch came to within 2 percent of that goal, when 169,375 metric tons of fish were caught. The reason for just missing the mark was the poor catches of Baltic cod which were 6,000 metric tons below the planned catch of 47,300 metric tons.

Polish fisheries consist of state, private, and cooperative enterprises.

Organization	Quantity
	Metric Tons
State enterprises	131,842
Cooperative enterprises	19,337
Private enterprises	18,196
Total	169,375

According to Soviet sources, the Polish State fishing enterprises had already fulfilled their portion of the 1961 quota--131,000 metric tons--by December 20, 1961. It may, therefore, be concluded that either the cooperative or private enterprises (or both) failed to attain their 1961 quota.

The average age in Poland is 31 years for state-employed fishermen, 36.4 years for cooperative fishermen, and 40 years for private fishermen. State-employed fishermen averaging only 6.5 years of fishing experience caught more fish than cooperative and private fishermen averaging 10 and 18.4 years of experience, respectively. Govern-

Species	Quantity
	Metric Tons
North Sea herring	78,178
Cod	41,106
Baltic herring	17,622
Mackerel	12,958
Sprats	11,342
Brackish-water fish	2,521
Flatfish	2,410
Redfish	2,378
Eel	298
Salmon	183
Other	379
Total	169,375

ment support in investments, modern equipment, research, and education most likely contributed to the better catch record of the state-employed group.

"Dalmor" Freezer, Stern-Trawler: Poland's large herring catch was due partly to the introduction in 1961 of Dalmor-type stern-trawlers. The Dalmor B-15 class is a fishing vessel of 2,890 gross tons, 85 meters (280 feet) long, 1,339 cubic meters (47,250 cubic feet) hold capacity, and 12.5 knots average speed. It is identical to the Soviet Leskov RRT-400 class vessel. Dalmor-type vessels are rebuilt at Polish shipyards in Gdynia on the Baltic Sea. They are designated Dalmor class if delivered to the Polish fleet and Leskov class if delivered to the Soviet fleet. The names Dalmor and Leskov were those of the first vessels of this type launched for each country.

Present plans call for the construction of a total of 35 vessels of this class; 20 will be delivered to the Soviet Union and 15 to Poland. At least 8 (Leskov, Mamin Sibiriak, Myr, Druzhiba, Sputnik, and Lunik for U.S.S.R. and Dalmor and Kastor for Poland) were built in 1961. Construction of 9 vessels is scheduled for 1962. These vessels operate in the North and South Atlantic fishing grounds. During one 84-day trip, a Dalmor-type vessel caught 1,050 metric tons, or 12.5 tons per day, of fish; on another trip of 114 days, the catch was 2,160 metric tons, or 18.9 metric tons per day.

"Miedwie" Freezer-Trawler: Vessels of the B-20 class, called Miedwie class after its prototype, have also been constructed at the Gdynia shipyards. The first was launched in August 1961; by spring 1962, ten vessels had been constructed (Miedwie, Mielno, Mamry, Morag, Morskie Oko, Wigry, Wielczno, Sejno, Szczytno, and Gardno). Plans provide for five additional vessels to be completed by 1963. The Miedwie B-20 is about 750 gross tons, 61 meters (202 feet) long, and 10 meters (33 feet) wide. It has a crew of over 30 and a range of 3,000 miles and 45 days. Its hold capacity is 553 cubic meters (19,514 cubic feet); half is used for salted fish at 0° C. (32° F.) and half for frozen fish at -25° C. (-13° F.). The total cargo capacity is 280 metric tons. The B-20 moves at an average speed of 13 knots with a 1,375-hp. engine. Its winch has a traction capacity of 10 tons at a speed of 70 meters (230 feet) per minute. These trawlers are to be used in the North Sea and in Northwestern and South Atlantic herring and mackerel fisheries. Three B-20

Poland (Contd.):

vessels participated in the Georges Bank fishing in the early spring of 1962 (Miedwie, Mielno, and Mamry). All fishing on the B-20 is done to starboard. Part of the catch is frozen in blocks and stored in the freezer hold; the other part is salted and stored in barrels in the refrigerated hold.

Four B-20-1 vessels, a variant of the B-20, were sold to the French fishing industry.

The Poles have also finished the designs for a stern-trawler-class B-23, which will reportedly have twice the freezing capacity of the B-20. Plans for a B-24 class are also being prepared.

Outlook for Fisheries: The plan for 1962 provides for a catch of 182,000 metric tons. Expected production of fish fillets is 4,700 tons (a 45-percent increase over 1961); production of 19,900 tons of fish fillets annually is expected by 1965.

A long-term fishery development plan for the years 1961 to 1980 has been prepared. It provides for a total annual catch of 900,000 metric tons by 1980, and for an increase from 110,300 tons of fish products in 1960 to 530,000 tons in 1980. The export of fish products is planned to increase eight times by 1980.

Over 500 vessels are to be added to the Polish fishing fleet during the 1961-1980 period. Fishing area in the Atlantic by the Poles will be greatly expanded in northwest-ern, as well as tropical, waters. Considerable scientific and economic research will be necessary. The latter must justify the investments in long-range motherships, freezer trawlers, and factoryships by proving that fishing at such distances is profitable.

It is estimated that planned catches will increase Poland's per capita consumption of fish to 11.5 kilograms (24.2 pounds) by 1980. In 1960 it was only 4.3 kilograms (9.5 pounds), and in 1955 only 2.6 kilograms (5.7 pounds). The production of animal feed from fish will also greatly increase. (Peche Maritime, February 20, 1962; Zycie Warszawy, January 30, 1962; Polish Maritime News, February 1962; World Fishing, March 1962; various unpublished sources.)

Note: See Commercial Fisheries Review, November 1961 p. 63.



Portugal

CANNED TUNA INDUSTRY:

The Japan Export Trade Promotion Association (JETRO) in May 1962 released a report on the canned tuna industry in Spain and Portugal. A translation of the report on Portugal follows:

Production of canned fish products in Portugal in 1960 totaled 76,244 metric tons, of which 58,305 tons consisted of canned sardine and 9,341 tons canned anchovy, and those two products together comprised 90 percent of the total canned fish production. Canned tuna was the next leading canned fish product with 5,552 tons. Production of canned tuna has increased yearly since 1957 and the 1961 production represents more than a twofold increase over the 1957 production, which totaled 2,249 tons.

In Portugal there are 230 canneries employing about 18,000 workers. Production per worker is approximately 4.2 tons, which is similar to the output per worker in Spain, although the average number of employees per cannery is about double that employed at canneries in Spain. Ten percent of the canneries are located in the Madeira and Azores Islands, but the number of workers employed at those canneries corresponds to only four percent of the total cannery workers in Portugal. Other canneries are concentrated in Matozinhos, Setubal, Portimao, and Olhao, in Portugal proper.

Fifteen percent of Portugal's canned fish are produced by four large canneries and 85 percent are presumably packed by more than 200 other canneries, each of which is thought to produce less than one percent of the total canned output.

The can supply situation in Portugal is about the same as that in Spain, but since Portugal does not manufacture tin plate, it does not have the numerous problems confronting Spain, such as price and quality control, protective policy versus free trade, financial and tariff administration, and government aid for industrial development. Portugal imports 52 percent of its tin plate from France, 19 percent from England, 11 percent from Germany, and 10 percent from the United States. Production of cans is handled either by the canneries themselves or by cannery cooperatives.

Portugal imports a considerable quantity of raw tuna to supplement its domestic tuna supply, of which there is a tremendous shortage. Portugal's fish imports consist mainly of bluefin tuna, most of which are imported from Portugal's overseas possessions, as well as from Tangier (Spanish Morocco) and Morocco, where bluefin tuna are caught in great abundance and prices are low, and no hard money is needed to make payments.

In Portugal, price disputes between fishermen and canneries constitute the basic hindrance to the development of that country's canning industry. Unless the price problem is solved, the cost of the final product will rise since the packers cannot cut their other production costs, and this will place Portugal at a disadvantage in competing with other countries in the world tuna market.

Portugal's exports of canned tuna will face the obstacle of the European Common Market. Already there is increasing apprehension among Portuguese tuna packers that the Common Market will boycott their products. One other serious problem confronts Portugal, and that is the boycott on Portuguese products carried out by the new African nations. However, at the present stage of development, it is difficult to make any prediction as to how this boycott will affect Portugal's canned tuna industry.



Saudi Arabia

FISHERIES POTENTIAL:

The International Bank for Reconstruction and Development sent an Economic Study Mission to Saudi Arabia in 1960.

Saudi Arabia (Contd.):

The Mission's report Approach to the Economic Development of Saudi Arabia reported as follows on the Saudi Arabia fishing industry:

"Seafood can be a much more important item in the diet of the people of Saudi Arabia than it is at present. Most of the fish and other seafood are consumed fresh in the area in which they are caught, usually on the day of catch. Some fish is kept for short periods on ice and some fish is dried for inland sales. The canning and freezing of fish has not yet been developed.

"There is considerable potential for development in the fishing industry in Saudi Arabia. Even though there are several thousand fishermen on both the Red Sea and the Persian Gulf coasts, the industry is still in the early stages of development. Fishing activities are restricted in part by the type of vessel, the gear and equipment being used, but principally by the lack of marketing facilities such as those required for preservation and transport.

"Studies on fish and other seafood in the Red Sea and the Persian Gulf warrant further investigation by an independent expert in the field. It is recommended that the results of these studies be made available to the private sector for further development, and that the Government provide the necessary incentives to get the industry properly established...."

A fishing company in Jidda has an exclusive concession for commercial fishing in Saudi territorial waters of the Red Sea. It is looking for a United States company which is experienced in fishing and processing fishery products to participate in the capital of the company and to undertake its technical management.

The company was organized in 1952 by HRH Prince MIT'AB bin 'Abd al-'Aziz. On January 29, 1952, Prince Mit'ab had obtained from his father, King 'Abd al-'Aziz, the exclusive concession for the fishing, extracting, gathering, processing, and production of all fish and sea life, mother-of-pearl, and other commercially useful shell and shellfish in the territorial waters of the Saudi Arab Kingdom; the right to sell and export these products is included in the concession. This concession was granted for a 40-year period. The company was organized to exploit only the fish in the Red Sea; a small company gathering and exporting sea shells currently is operating independently along the Red Sea coast.

The authorized capital of the company is 12 million riyals (US\$2.57 million) of which about 3.6 million riyals (\$800,000) has been paid in. This capital was supplied as follows: Prince Mit'ab, one million riyals; Prince MISH'AL bin 'Abd al-'Aziz, one million riyals; Prince FAHD bin Saud, one million riyals; former Finance Minister Muhammad Surur SABBAN, 300,000 riyals; and Muhammad BIN LADIN, a businessman, 300,000 riyals. Except for a small operating account, the company's real property and equipment account for all of the paid-in capital. The company apparently negotiated a small loan some years ago, but this has now been paid off and the company is, according to its bankers, debt-free.

In its first year, the company made an arrangement with a Swedish firm by which it purchased fishing and fish-processing equipment that the Colombian Government had decided not to accept, in exchange for a promise by the Swedish firm to help in the installation of this equipment and the technical operation of the company itself. The Swedish company broke its agreement and after the arrival of the equipment the Saudi company was left without the required technical assistance. The equipment was delivered and partially installed in a rambling structure on the company's property on a private quay near the Jidda harbor. The equipment purchased by the company includes machinery for (1) canning operations; (2) fish meal processing; (3) fish oil extraction; (4) ice manufacture; (5) one deep-freeze storage room; (6) three cool-storage rooms; (7) power generation; and (8) repair services (lathe, drills, shop equipment, etc.). In addition, the company has on the premises four small Diesel-powered (40-60 hp.) fishing boats, four powered dories, and one larger 105 hp. lift-net boat. A 130-ton tuna vessel is laid up for repairs in Suez. It appears that both the plants and the boats which were sold to the company were designed for use in the frigid zone

waters of Sweden. These special technical difficulties, added to those which a new venture of this kind would normally meet, were more than the Saudi company could cope with. The company has never gone into operation on a commercial scale. Most of its equipment has been in "moth balls." The primary task of its employees is to preserve it. The boats are, however, in poor shape.

During the last few years, technical experts from the FAO and various countries, including Japan, Italy, and Yugoslavia, have visited the company's plant, at its request, to study the possibility of re-opening it. So far, nothing has come of these visits.

The company is looking for both financial and technical help. More specifically, it would like to find a United States company which would be sufficiently interested to send an expert to assess the usefulness of the present plant and equipment and analyze the possibilities of establishing a successful fish-processing plant. If the firm decided that the market potential were sufficient and that such problems as shortage of fresh water and skilled manpower could be overcome, the Saudi company hopes that the United States firm would invest in the re-activated company and take over its technical operation. The type and amount of return the American company would receive would presumably be worked out in direct negotiations between the American firm and the Saudi company. The backers of the Saudi company have tied up considerable capital in the venture; they have been discouraged by years of failure. There are signs that they would be receptive to proposals offered by competent negotiators. (United States Embassy, Jidda, reported May 9, 1962.)



South Africa Republic and South-West Africa

PILCHARD-MAASBANKER FISHERY TRENDS, MARCH 1962:

Fishing for pilchard-maasbanker (jack mackerel) off the Cape west coast of the South Africa Republic continued at a steady rate in March while at Walvis Bay in South-West Africa those companies that did not start fishing earlier commenced operations during the month. This earlier start in fishing in South-West Africa resulted in the overall catch being higher than in the same months last season.

Production of fish meal was running at a higher level than it was last year and this enabled minor additional quantities to be marketed. The price was stiffening as demand was in excess of available supplies.

The price for fish oil remained unchanged at the depressed level of the early months in 1962, but the industry's total production is nevertheless fully committed. Canned fish production was steady against a somewhat decreased demand with prices in general being maintained.

Following increases earlier in the year, prices of spiny lobster in the South Africa

South Africa Republic and South-West Africa (Contd.):

Republic were unchanged in March. The perennial heavy demand remains and shipments of frozen tails to the United States continue to be made at the normal rate which is designed to spread delivery over the whole year. (The Standard Bank Review, May 1962.)

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FISH MEAL AND OIL INDUSTRY, 1960/61 SEASON:

A further substantial increase in South and South-West Africa's shoal fish catch was reported in the Seventeenth Annual Report (covering the period October 1, 1960, to September 30, 1961) of the Fisheries Development Corporation of South Africa Ltd. The Report was presented to the annual general meeting of the Corporation held in Cape Town on March 7, 1962.

The upward trend in catch of the pelagic species forming the raw material of the fish meal and oil and canning industries, as reported over the past three years, was continued at an increased pace during the period under review, which reflected record returns in respect of both the South African and South-West African inshore fisheries.

ceived 85 percent of its raw fish from waters north of Dassen Island as compared with only 22 percent the previous year.

The excellent quality of the pilchards was reflected in the unusually high yield of oil achieved by the reduction plants. In two factories the exceptional figure of 33 gallons of oil per ton of fish processed was maintained for a short period in mid-season. But perhaps more striking effect is the fact that the 434,138 tons of pilchards delivered to South African factories January-September 1961 were estimated to consist of a lesser number of fish than the 345,136 tons of pilchards delivered over the equivalent period in 1960. Quite apart from its economic value, the merit of this development from a conservation angle needs no explanation.

It should be recorded, lest a wrong impression be unwittingly created, that the reduction factories receiving their fish receipts from "south fish," or shoals in the False Bay area, once again enjoyed a highly successful season, though the oil yield from fish of that stock was decidedly lower than that from the catches north of Dassen Island.

In South-West Africa the quota for shoal fish was established at 375,000 short tons divided equally among the six factories oper-

South and South-West Africa's Reduction Plants: Receipts of Raw Fish and Production of Fish Meal and Oil,
Fiscal Year 1960/61 and 1959/60

	Raw Fish ^{1/}		Meal Production		Oil Production	
	1960/61	1959/60	1960/61	1959/60	1960/61	1959/60
	(Short Tons)				(Long Tons)	
South Africa	557,075	425,143	123,488	93,620	41,158	25,302
South-West Africa	380,469	306,096	78,138	55,440	17,768	14,811
Total	937,544	731,239	201,626	149,060	58,926	40,113

^{1/}Includes pilchards, maasbanker, and mackerel.
Note: Fiscal Year—October 1-September 30.

Two features, in particular, dominated the South African 1960/61 season, the first being the return of vast shoals of pilchards to the waters adjacent to the main concentration of factories on the St. Helena Bay coast, the second being the very high quality of the pilchards landed.

The proximity of the fish to the factories had the twofold effect of reducing the cost of catching and making possible the expansion of canning activity in the South African industry, which packed the equivalent of 994,467 cases (48 one-pound tall cans) during January-September 1961 as compared with 720,610 cases for the same period of 1960. One large factory in the area in question in 1961 re-

ating at Walvis Bay. The fish were readily accessible and in good condition, allowing processors once again to undertake a heavy canning program yielding the equivalent of 3,904,264 cases (48 one-pound tall cans) at the end of September 1961.

All fish oil surplus to the requirements of local consumers was sold to a single international buyer for consumption in the United Kingdom and Europe. Not all the record production of fish meal was disposed of in the course of the season by reason of the export quota system imposed upon members by the Fish Meal Exporters' Organization (embracing Angola, Iceland, Norway, Peru, and South Africa/South-West Africa). The countries that

South Africa Republic and South-West Africa (Contd.):

belong to the Organization account for more than 90 percent of world exports of fish meal.

Members of the Organization have agreed to pursue a common policy, with a view to preventing a recurrence of the disturbed speculative market conditions of 1959 and 1960 and to ensure a continuity of supply to consumers at realistic price levels. The activities of the Organization have had a significant impact on the fish meal market and have resulted in a 50 percent rise in price from the very low levels that prevailed during 1959/1960. The Fish Meal Exporters' Organization at the International Fish Meal Conference held in Rome in March 1961, under the auspices of the Food and Agriculture Organization of the United Nations, invited all countries producing supplies surplus to their own requirements to subscribe to membership.

In the fishing industry, there appears to be only one truly global organization and that is the International Association of Fish Meal Manufacturers (this is an entirely separate organization from the Fish Meal Exporters' Organization). The Manufacturers' group handled a difficult marketing situation for fish meal which became apparent in 1959/60. It is cooperating with other organizations in promotion activities and the dissemination of scientific knowledge to assist in the requirements of, and demand for, fish meal and the exploration of the requirements of, and demand for, fish meal and fish flour for human consumption.

In South Africa there are closely-knit organizations already in existence which could readily belong to global units. Two such are the South African Fish Oil Producers' Association (Pty.) Ltd, and the South African Fish Cannery's Association (Pty.) Ltd. The primary function of the first-named organization is the marketing of fish body oil, which it does very successfully. Its position vis-a-vis buyers is relatively weaker than is the corresponding position of its sister organization, the South African Fish Meal Producer's Association (Pty.) Ltd, by reason of the greater number of commodities in competitive supply, as for instance whale oil and various vegetable oils. Fish meal has not the same strongly competitive position to contend with, and the situation has now arisen that, while its price has firmed considerably

in world markets, that of fish oil, in complementary supply, has shown a disappointing weakness as reflected in the lower price obtained for the 1962 production.

The South African Fish Cannery's Association (Pty.) Ltd. does not handle the actual sales of canned fish, which are made by individual cannerys or selling combines of their own creation, but it acts as a forum where problems common to all fish cannerys may be discussed, and, in this way, serves a very useful purpose.



South Africa Republic

PILCHARD-MAASBANKER FISHERY, JANUARY 1962:

Off the Cape west coast of the South Africa Republic the 1962 pilchard-maasbanker (jack mackerel) season made a good start. The January pilchard catch was only a few thousand tons short of the record landings of January 1961. Good fishing continued through February 1962 and into March. Although the landings were not far below those of 1961, the pilchards were not of the same high quality as those brought in last year. This is shown by the oil yield from the fish meal plants, which is well below that of the first few months of 1961.

It seems that fishermen and factories were not interested in catching mackerel and maasbanker during the short shoal fishing season permitted during November and December 1961. In those two months at the end of 1960 nearly 30,000 short tons of mackerel and maasbanker were landed. In November 1961 the total catch was 2,103 tons maasbanker and 76 tons mackerel; even less fish were caught in December—183 tons maasbanker and 124 tons mackerel. The total catch in those two months of 1961 was a mere 2,502 tons.

One reason for this small catch was the steady development of tuna fishing off the Cape coast using "shoal" fishing boats for long-lining during the off-season.

The Cape west coast fish catch in January comprised 64,388 short tons pilchards, 1,216 tons maasbanker, and 6,046 tons mackerel. The total catch was 71,650 short tons. This compares with 69,879 tons pilchards, 6,745 tons maasbanker, and 3,821 tons mackerel landed in January last year; and with 23,162 tons pilchards, 5,694 tons maasbanker, and 2,147 tons mackerel in January 1960.

The January 1962 catch yielded 16,163 short tons of fish meal, 967,432 imperial gallons of fish body oil, 1,052,448 pounds of canned pilchards, 585,168 pounds of canned maasbanker, and 1,776,264 pounds of canned mackerel.

The January 1961 catch yielded 17,286 short tons of fish meal, 1,342,460 imperial gallons of fish body oil, 2,312,272 pounds canned pilchards, 1,763,416 pounds canned maasbanker, and 819,366 pounds canned mackerel. (*The South African Shipping News and Fishing Industry Review*, March 1962.)



South-West Africa

PILCHARD-MAASBANKER CATCH QUOTA FOR 1962 INCREASED:

The South-West Africa pilchard-maasbanker (jack mackerel) fishing industry has been allowed another large increase in the year's catch quota. In 1961 this limit for the six Walvis Bay factories was raised by 65,000 tons to 375,000 short tons distributed equally among the factories. For 1962 the quota has been raised by another 60,000 tons to 435,000 tons.



With each of them set to process 72,500 short tons of fish during 1962, the Walvis Bay factories started early this year. Nearly all the factories were expected to be in operation by the end of March.

Early reports indicated that the pilchards shoals were abundant and readily available although the fish were medium size with an oil yield of about 12 gallons a ton.

The decision of the South-West Africa Administration to allow an increase in the catch quota results apparently from a recommendation by the South-West African Fisheries Advisory Council which met in Cape Town in February 1962.

The Council, which advises the Executive Committee of the Administration, is made up of representatives of the Administration, research bodies, the fishing industry in the Territory, and fishermen. (The South Afri-

can Shipping News and Fishing Industry Review, March 1962.)



Spain

FROZEN TUNA EXPORTS TO ITALY:

The Japan Export Trade Promotion Association (JETRO) received information from its representative in Venice, Italy, that Spain reportedly is exporting Atlantic Ocean-caught tuna to Italy. According to the report, Spanish fishing vessels have landed an estimated 700-800 metric tons of skipjack, including some small yellowfin, at Venice and two other Italian ports since February of this year. Presumably, these tuna are being admitted into Italy under the 25,000-ton duty-free Italian quota established by the Common Market, of which 14,000 tons have been allocated to Japan and 11,000 tons to other countries.

The Japanese fishing industry is closely watching Spain's tuna exports to Italy since Italy had originally agreed to increase Japan's quota, if imports from other countries fell short of 11,000 metric tons. This development is viewed with concern by Japan which, until recently, had practically supplied all the raw tuna to Italy.

Reportedly, the Spanish tuna exports to Italy are round frozen in brine and the fish ranged between 3-10 kilograms (6.7-22.4 pounds). The fish sold at about US\$275 per metric ton. Meat recovery is reported to be 33-34 percent, in which case the price paid for the fish seems fairly high. Italy reportedly has contracted to purchase 1,800 tons of tuna from Spain this year. (Suisan Keizai Shimbum, May 5, 1962.)

CANNED TUNA INDUSTRY:

The Japan Export Trade Promotion Association (JETRO) in May 1962 released a report on the canned tuna industry in Spain and Portugal. A translation of the report on Spain follows:

The canned tuna pack in Spain of 19,480 metric tons in 1959 comprised 35 percent of the total pack of canned marine products, and was valued at 628,730,000 pesetas (US\$57.4 million). Tuna packed in olive oil totaled 13,370 metric tons, or about 70 percent of the total canned tuna pack, which in 1959 reportedly was much less than in the preceding year.

In Spain there are approximately 800 canneries employing 35,000 workers, of which 75 percent are women. Thirty percent of the workers are regular employees. Most of the canned tuna is packed in the northwestern area (Galicia) and the Cantabrian district. The principal ports serving the canneries are also concentrated in those areas. In Vigo and other

Spain (Contd.):

er parts of the northwestern area, modern packing plants have been constructed, but in general, the canning industry in that area is not progressive. In 1960, 17 percent of Spain's canned tuna was packed by the two large packers located in Vigo (which are the two largest packers in Spain), 43 percent by canneries producing between 1-3 percent of the total canned tuna pack, and 40 percent by 700 small canneries.

Tin plate is manufactured only by one company, which cannot possibly supply the domestic demand, so Spain continues to import this material. Import duties collected for tin plate are refunded if it is used to make cans utilized to pack fish products for export. But this arrangement has not worked out very well. Almost every cannery has at least one tin-plate cutting machine with which to cut and make cans, but the printing work on cans is normally contracted out. There are large can manufacturers in Spain, including a recently-built factory with a productive capacity of 100 million cans per year. Some progress has been made toward standardizing specifications for tin cans, but no standardization has been attempted for aluminum cans.

It is believed that 75 percent of the tuna packed in Spain is sold to the domestic market and 25 percent is exported. Canned tuna, canned sardines, and canned anchovies are the leading canned fishery products exported by Spain. Those three items together constitute 60-90 percent of Spain's total exports of canned fishery products.

Principal countries to which Spain exports canned tuna are Switzerland, Italy, France, Great Britain, and the United States. At one time the United States was viewed as a promising market, but Spanish exports to the United States began to decline in 1960 and apparently this situation has not yet improved. (JETRO Report, May 1962.)

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VIGO FISHERIES TRENDS, FIRST QUARTER 1962:

Fish unloaded at the port of Vigo during the first quarter of 1962 was 44.8 percent less in weight and 13.7 percent less in value than during the last quarter of 1961, and 23.1 percent less in quantity and 6.5 percent less in value when compared to the first quarter of 1961. Average price per kilo for the first three months of 1962 was 13.24 pesetas (10 U. S. cents a pound) compared with 9.80 pesetas (7.4 cents a pound) for the fourth quarter of 1961 and 10.84 pesetas (8.2 cents a pound) for the first quarter of 1961.

Table 2 - Fish Handled by the Vigo Fish Exchange, First Quarter 1962 with Comparisons

Period	Quantity		Value	
	Metric Tons		1,000 Pesetas	US\$1,000
1962: Jan.-Mar. . .	11,065	146,117	2,435	
1961: Oct.-Dec. .	20,041	169,325	2,822	
Jan.-Mar. . .	14,387	156,191	2,603	

Table 3 - Utilization of Fish Landed at Vigo Fish Exchange, First Quarter 1962 with Comparisons

	Shipped Fresh to Domestic Markets		Other Processing For Canning (Smoking, Drying, Fish Meal, etc.)	Local Consumption
	(Metric Tons)			
1962: 1st Qtr.	8,624	565	1,160	716
1961: 4th Qtr.	10,110	5,365	3,728	838
1st Qtr.	10,637	1,045	1,888	817

Decreases in small hake, pomfret, and sardine landings were the reason for the drop in quantity during January-March 1962 when compared to the same period in 1961. (United States Consulate, Vigo, April 19, 1962.)



Tahiti

PROGRESS OF TUNA BASE PLAN:

A Japanese trading company which has entered into an agreement with a large United States tuna packer to jointly establish a tuna fishing base at Tahiti in the South Pacific Ocean, is steadily proceeding with its plans to procure fishing vessels. As soon as the company's application is approved by the Japanese Fisheries Agency, construction of the 1,100-ton capacity cold-storage plant in Tahiti is expected to be undertaken. Under the present plan, the base is to be ready for operation in 1963.

Table 1 - Average Ex-Vessel Prices of Principal Species Landed at Vigo Fish Exchange, First Quarter 1962 with Comparisons

Species	1962			1961					
	January-March			January-March			October-December		
	Qty.	Avg. Price		Qty.	Avg. Price		Qty.	Avg. Price	
		Metric Tons	Pesetas/Kilo		Metric Tons	Pesetas/Kilo		Metric Tons	Pesetas/Kilo
Octopus	1,711	4.44	3.4	1,638	6.03	4.6	116	5.88	4.4
Horse mackerel	1,662	6.00	4.5	753	5.88	4.4	2,763	5.04	3.8
Hake, large	145	59.16	44.7	91	60.63	45.8	103	67.58	51.1
" small	2,794	23.07	17.4	4,519	16.81	12.7	2,313	24.40	18.4

Tahiti (Contd.):

Approval by the Fisheries Agency has been delayed since the Agency is confronted with other tuna problems at the present time. Reportedly, the trading company plans to charter 14 vessels of the 99-180 ton class and has already secured agreements with fishing vessel owners. (Suisan Keizai Shimbum, May 2, 1962.)

Editor's Note: This is one of two applications to establish a tuna base at Tahiti. The other application involves a Japanese fishing company, a large United States tuna packer, and a French firm.



Taiwan

TUNA FISHING VESSELS
ADDED TO FLEET:

A continued increase in fishery production is expected in Taiwan (Formosa) during the remainder of this year as additional boats are added to the fishing fleet. Two 550-ton tuna vessels constructed in Japan were delivered to a Taiwan fishery firm in April 1962 and 12 145-ton tuna vessels being constructed locally with United States aid funds are due for delivery in September. When in service, these vessels are expected to increase the fisheries catch by some 7,000 metric tons annually.

In addition to the vessels mentioned, the Provincial Government plans to apply to the United Nations for a loan to help construct a 700-ton vessel to investigate fishery resources in the Indian and west Pacific oceans.

The Government's recently formalized application to IDA for a US\$6.3 million loan to finance construction of new fishing vessels is still under consideration. These vessels would be part of the Government's over-all plans to develop the fishing industry. The plans also call for establishing fishing bases abroad, improving shipbuilding techniques on the Island, training fishery technicians, and expanding export sales.

In March 1962, a Taiwan firm sold five tons of frozen shrimp to France. It is reported that this is the first time shrimp have been exported from Taiwan.

By the end of March 1962, Taiwan's fishery landings in 1962 totaled 68,638 metric tons. 15.2 percent more than in the first quarter of 1961. (United States Embassy, Taipei, report of May 21, 1962.)



U.S.S.R.

SOVIET FISHING ON GEORGES BANK IN
NORTH ATLANTIC, APRIL 1962:

The large fleet of Soviet vessels (SRT's) fishing for herring moved away from Georges Bank to more northerly waters towards the end of April 1962. The Soviet VNIRO (Federal



Herring gill nets being hauled by a Russian drifter-trawler on Georges Bank.

Research Institute for Fisheries and Oceanography) recommended that the combination gill net-trawl vessels (SRT's) shift to trawling for groundfish during the summer months. (Rybnoe Khoziaistvo, February 1962, and unpublished sources.)

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SOVIET FISHING ON GEORGES BANK IN
NORTH ATLANTIC, MAY 1962:

In late May, the Soviet fleet on Georges Bank numbered well over 150 vessels, exceeding the peak of 110 vessels reported fishing in the area in late 1961. This year's fleet includes 150 to 180 herring gill-netters, a tanker, a seagoing repair tug, and four cargo-type motherships. (Unpublished sources.)

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HERRING FISHING IN NORTH ATLANTIC:

The early arrival of Soviet stern trawlers at the Georges Bank fishing grounds in the North Atlantic in February 1962,

U. S. S. R. (Contd.):

four months in advance of their 1961 arrival, is explained in the January 1962 issue of *Rybnoe Khozjaistvo*. During the first half of 1961 the Soviet herring catch from the North Atlantic slightly exceeded the planned half-yearly quota (by 0.5 percent), but in the third quarter the catch was only 55.7 percent of the quarterly plan. It had been equally poor in October and only somewhat better in November. In the second half of 1961 the herring catch in the Atlantic dropped 162,000 metric tons below the plan.

This failure, according to the Soviets, was due to: (1) bad weather in the second half of the year; (2) late fattening and late herring concentrations in usual catch areas; (3) fewer vessels fishing because many were in dock for repairs; and (4) insufficient exploitation of the Northwest Atlantic fishing grounds where the fishing conditions were better.

The Atlantic herring catch was so poor that the over-all Soviet production of fish for human consumption was merely 94 percent of the yearly goal. Only 7 out of 20 of the Russian Republic's Sovnarkhozes (Regional Economic Councils) obtained the planned amount of fish for human consumption. The fishing fleets of Arkhangelsk, Murmansk, Karelia, Kaliningrad, and the Baltic Republic failed to fulfill their quotas.

Another reason for the early arrival of the Soviet fishing fleet on Georges Bank in 1962 was the way the 1961 catch had been planned. The total yearly increase was to have been 6.7 percent over 1960, but its quarterly distribution was uneven. Only a 1-percent increase was allotted the first quarter, while the third quarter's increase was to be 17 percent above the 1960 third quarter. The early return of the 1962 fishing fleet may show that the Soviet quarterly quotas have been redistributed for 1962, requiring a larger catch earlier this year than in 1961. Early returns also show that the Soviet Atlantic fleet is following directives from the Soviet Fisheries Administration which demand that: (1) Fleets of the Sovnarkhozes of the Soviet Northwest which had failed in meeting the 1961 herring quota must not concentrate their SRT's (medium fishing trawlers) in the North Atlantic only, but must also fish the Northwest Atlantic and the North Sea; (2) during the summer months when herring catches in the North Atlantic decrease, some of this fleet must fish the South Atlantic along the African Coast.

The Administration of the Murmansk fishing combine is striving to better its herring catches in 1962. Additional and more modern vessels were placed in the herring fishery fleet which reportedly were to sail from Murmansk to Iceland on June 10, 1962. As in previous years, the Soviets will depend on pair trawling, but will do more purse-seining with nets of lighter and thinner twine. (*Rybnoe Khozjaistvo*, No. 1, January 1962; *Fiskaren*, February 14, 1962.)

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FISHING IN SOUTH ATLANTIC OFF SOUTH-WEST AFRICA:

By the end of 1961, a total of 25 Russian fishing vessels had used the facilities of Walvis Bay harbor, South-West Africa, for water, stores, and some minor repairs. The majority were stern trawlers, of either the 3,700-ton Pushkin-class or the larger Maikovskii-class factory trawlers. In the course of the year, three refrigerated fish transport vessels were identified. One of the transports was accompanied by a 70-foot steel-hulled purse-seiner towed out from a Russian base.

The purse-seiner was described as a type that might have been developed for the North

Sea herring fishery. The deckhouse was just aft of amidships and there was a turntable on the stern for launching a large synthetic net. Later this same vessel was seen among the local pilchard boats as they were making their catches. Walvis Bay fishermen reported that the seiner made a number of unsuccessful attempts to net pilchards. Several weeks later, after having had no success, the vessel returned to Russia.

In January 1962 the Russian South Atlantic fishing fleet was still fishing white fish off the coast of South-West Africa. There were 8 to 10 trawlers and two depot ships operating between Walvis Bay and Tiger Bay in Angola. During December 1961, Walvis Bay was visited by the superintendent of this fleet. He stated that Russian interest was still in white fish and deep-sea trawling; the ships present were not equipped for pilchard catching. The catches, he said, were being sent back to Russia.

During January 1962, another Russian research ship made a second appearance at Walvis Bay, having called in June 1961 the first time. The vessel in the meantime returned to Russia for some time and was now back in South-West African waters to conduct research into the eating habits of the fish and the plankton resources of the area. In the same month, a stern trawler also called for water and stores. Its Captain Yerzenyev stated that the rest of the fleet was operating off the Angola coast, about 10° south latitude.

There were no other reports of Russian fishing activity off South-West Africa until mid-April 1962. At that time it was reported that three Russian factoryships had put into Walvis Bay for water and provisions and a fourth had put in for repairs. On April 19 another stern trawler put in for repairs.

Because of foreign vessels fishing off South Africa, there is a growing sentiment that the South African Government must extend its own territorial waters and those of South-West Africa to 12 miles. Representations to this effect have been made from Walvis Bay by fishing factories, the Boat Owners' Association, the Chamber of Commerce, and the Mayor. The Administrator of South-West Africa expressed the hope that the Government would extend the limits to 12 or 15 miles. (United States Consulate, Capetown, May 8, 1962.)

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U. S. S. R. (Contd.):

NEW VESSELS FOR ATLANTIC FISHERIES:

Since the end of 1961, five large fishing vessels were completed for delivery to the Soviet Atlantic fishing fleet.

Three were Maiakovskii-class sterntrawlers: Ametist, Kapitan Andrei Taran, and Linard Laytsen. They are freezer trawlers of 3,170 gross tons and 85 meters (almost 279 feet) long. Each vessel is equipped with processing and fish meal-manufacturing equipment. The crew for each vessel numbers over 100 men.

The other two of the five vessels are the Sovetskaja Latvija and Albatros, 3,230-gross-ton refrigerator factoryships, designed for taking on board split and whole fish from other fishing vessels, quick-freezing them, and delivering them to home fishing ports. Each vessel is 99 meters (almost 325 feet) long, has a speed of 15 knots, and carries a crew of 82 persons. (Unpublished sources.)

RESEARCH ON PACIFIC HERRING MIGRATIONS:

During 1956-60, TINRO (Soviet Pacific Institute for Fishery Research) tagged 22,600 Sakhalin herring with a return rate of 3.38 percent or 764 herring. It was established that Sakhalin herring winter in two areas: the Tartar Channel and Aniv Bay.

Soviet Bering Sea herring catches rose from none in 1960 to 68,000 metric tons in 1961. Catches in 1962 are reported to be considerably higher than in 1961. (Rybnoe Khoziaistvo, February 1962, and other sources.)

NORTH PACIFIC SALMON STUDY:

A study of the North Pacific salmon in accordance with the Northwest Pacific Fisheries Convention (U. S. S. R. and Japan) is being conducted by two vessels of the Pacific Research Institute of Fisheries and Oceanography (TINRO). One vessel will work in the south part of the Japanese Sea and the other in the North Pacific. On board the vessels are ichthyologists, biologists, hydrobiologists, and other specialists.

This year the institute will conduct a most thorough and widespread study of salmon.

Besides the sea investigations, a large research program is planned in the Far East. Spawning surveys of the rivers of Kamchatka, Magadan, Khabarovsk, and Primorski Krai regions will be conducted with the use of helicopters. (From a translation from Vodnyi Transport, April 12, 1962, by D. E. Bevan and O. A. Mathisen, Fisheries Research Institute, Seattle, Wash.)

FISHING ACTIVITIES IN BERING SEA, APRIL 1962:

In the Bering Sea fishery, over 200 Soviet vessels were sighted in the last week of April 1962. They were fishing for herring, flounder, and ocean perch. The fleet included 5 factoryships, 166 trawlers, 29 refrigerated transports, and several tankers and tugs. Of those



Typical Russian trawler operating in the Bering Sea.

vessels, 143 were operating in Bristol Bay and north of Unimak Island; 50 of them were in the area of the Pribilof Islands. Eight whale killers were operating in the Gulf of Alaska supported by two whale-processing ships. (Unpublished sources.)

NEW FREEZER-TRAWLER FISHING IN BERING SEA:

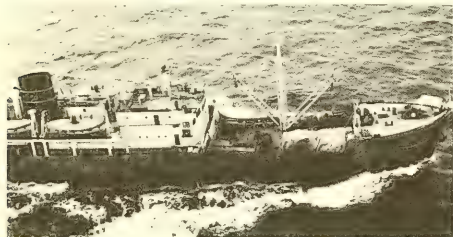
The new freezer-trawler Barabash, launched earlier this year at Nikolaev on the Black Sea, arrived in the North Pacific in May 1962. During a successful shakedown cruise off the west coast of Kamchatka, the vessel took 33,000 pounds of fish in a 50-minute drag.

The vessel departed for the Bering Sea to trawl for ocean perch, flounder, and herring. The vessel is 3,170 gross tons, 279 feet long, and is manned by a crew of 102. (Unpublished sources.)

U. S. S. R. (Contd.):

FISH PRODUCTION FOR HUMAN CONSUMPTION:

The total Soviet production of fishery products for human consumption in 1961 was 1,682,900 metric tons (product weight). The supply was 94 percent of the planned production. The production of fresh and frozen fish amounted to 778,000 tons which compares favorably with the 674,000 tons produced in 1960.



Typical Russian trawler operating in the Bering Sea.

The 1962 plan calls for a production of 1,936,500 tons of fishery products for human consumption from a total catch of 3,937,000 metric tons. It was previously reported that the Soviet Union's fisheries catch in 1961 was about 3.7 million metric tons of fish, whales, and other aquatic products. (Rybnoe Khoziaistvo No. 1, 1962.)

Note: See Commercial Fisheries Review, May 1962 p. 73.

FISHERIES DEVELOPMENTS IN FAR EAST:

The following article is a translation of a news story published in the Japanese fisheries periodical The Fishing Industry Weekly. It discussed the managerial and operational problems faced by the Soviet Union in its Far East fisheries. The Japanese article was originally translated from Russian by Haruyuki Sakiura, who is listed as translator for the Japanese Fisheries Agency.

According to Sakiura's introductory remarks, he was able to obtain the notes of a special reporter from an influential Russian newspaper, who was assigned to cover the Soviet Far East fisheries. The notes describe observations made by the Russian reporter, as follows:

Recently I had the opportunity of visiting the Soviet fishermen in the Soviet Maritime

Province, Sakhalin Island, and Kurile Islands, and also spent considerable time aboard a Soviet factoryship which operates in the waters extending from the Japan Sea to the Okhotsk Sea and then to the Bering Sea. The many things that I saw with my own eyes convinced me that the Soviet Far East fishermen were capable of successfully applying the marvelous technological developments provided to them by their Soviet shipbuilders. However, during this trip, which was my first tour of the Soviet Far East fishery, I also witnessed some disturbing aspects of this industry, which I will now relate.

King Crab Factoryships Discard Crabs:

There was conspicuous evidence that captured crabs were not being properly handled by the crab-canning factoryships. For example, crabs that had been left on the deck for even a short while beyond a specified length of time were handled as though they were no longer useful, although they could have been processed and canned as food for domestic animals. Food experts have proven the high nutritional value of such canned food for animal consumption. However, none of the factoryships were processing them and, instead, were wastefully throwing them overboard...

The Leningrad Shipyard had installed on one of the crab factoryships, equipment to process crab shells into crab meal, a valuable poultry feed. During the 1961 crab fishing season, this factoryship produced only a very small quantity of crab meal totaling 2,313 centners (231 metric tons)... Why weren't all the crab shells processed and made into crab meal? There is a reason for this. King crabs are canned according to a rigid rule whereby data on production must be reported daily to the production control room; whereas, crab meal production does not necessarily have to be reported, so whether or not crab meal is produced does not matter. For this reason, hardly anyone on the factoryship took any interest in crab meal production.

Other crab factoryships had absolutely no equipment, such as a grinding machine, with which to produce crab meal; moreover, they were old and too small to accommodate such equipment. According to the chief administrator of the crab fishing fleets, full utilization of crabs cannot be expected until the old vessels are replaced by new ones, a change which he strongly desires.

Modernization of all the crab factoryships, however, cannot be accomplished in one or two

U. S. S. R. (Contd.):

years. The solution, then, seems to lie in providing one or two auxiliary vessels, equipped with drying and grinding machines, to collect crab shells from factoryships and process them into crab meal. If this is done, it would be possible to produce more than 10,000 metric tons of crab meal for the Soviet poultry farms in the Far East. Drying and grinding machines are now being manufactured in the Soviet Union.

Saury Fishing and Production: The Soviet crab motherships began to conduct saury fishing in addition to crab fishing from the third year of their operations in the Far East waters. Saury, which are taken in the Far East waters, have a delicious taste and are very popular among fish consumers. Processing of both crab and saury should double production of the crab factoryships. Saury processed by the factoryships were all packed in oil. Saury can be marinated or salted, and when smoked, their taste is matchless. Perhaps some kind of an arrangement should be made whereby one factoryship packs saury in oil, another packs marinated saury, and the third salted saury. Shore canneries are equipped with smoking facilities and could produce smoked saury. Freezer vessels could also be utilized to supply delicious frozen saury to the coastal cities which, incidentally, do not receive an adequate supply of fresh fish...

Another matter which requires special mentioning is that production of canned saury could have been greater than actual output. On days when saury landings were so large that the factoryships could not possibly process the entire catch, the saury could have been transported to the processing plants on land by means of freezer carrier vessels or small refrigerated vessels. To be sure, the coastal packing plants have sufficient capacity to produce more than their current output, but there is no coordination of activities between the factoryships and shore plants, although they are both organized and controlled by the Soviet Far East Fisheries Bureau.

Saury fishing is regulated and fishing vessels are prohibited from taking saury in quantities beyond the processing capacity of each factoryship. This regulation became necessary because of the increase in the number of fishing vessels serving the factoryships. Needless to say, this is a time when small

refrigerated vessels can really be put to good use.

Quite understandably, the Far East Fisheries Bureau leaders are always complaining about the lack of refrigerated vessels and the Soviet fishermen are saying that the problem confronting them cannot be solved unless the number of refrigerated vessels are increased. The most important thing, however, is to eliminate idle vessels through efficient utilization of freezer carrier vessels. In the ports of Vladivostok and Nakhodka, fishing vessels are compelled to wait between 8 and 12 days to unload their catches, due to lack of unloading facilities and shortage of small refrigerated vessels...

With the exception of one factoryship named the Andrei Zakharov, Soviet factoryships are not equipped to process saury waste, which constitutes 40 percent of the fish. Head sections, viscera and tail sections, which contain much valuable minerals, are discarded. No one seems to seriously consider the use of fish waste. Even the Andrei Zakharov, which is equipped to process waste, is not producing even one gram of fish meal, for that factoryship has no production goal for fish meal and so there does not seem to be any enthusiasm on the part of the factoryship personnel to produce it.

Saury are known for their high oil content, but none of the factoryships are furnished with equipment to extract oil...

Oil is not difficult to extract from waste products according to the factoryship's technologist, a woman. She says that this can be done simply by installing in the factoryship a centrifuge to separate fish oil from stick-water under high pressure. Water is eliminated and the oil is then placed in separators. The technologist says that the factoryships operating in the Caspian Sea turn their fish waste over to vessels specially equipped for processing waste, and she could not see why the same thing could not be done by the factoryships operating in the Far East waters.

Coastal Plants Suffer from Raw Material Shortage: The Soviet Far East fish-processing plants definitely can be organized to locally process fish fillet, as well as smoked and marinated fish. In earlier days, the fishermen in the Maritime Province obtained most of their catches from nearby waters, so the Maritime Province Regional Fisheries Bureau had established large plants on the

U. S. S. R. (Contd.):

coast to process the catches. However, in recent years, the fishing grounds have shifted to the open seas, and fish processing is now conducted mainly by factoryships. As a result, most of the coastal plants are now operating at one-fourth of their production capacity. Moreover, their operations have become seasonal. The problem confronting the Far East Soviet fishermen can be readily solved by utilizing these idle facilities. The Soviet Far East Fisheries Bureau and the Maritime Province Regional Party Committee should exert their best efforts to remove the obstacles hampering the healthy growth of the Soviet Far East fisheries. (Japanese periodical, The Fishing Industry Weekly, No. 339, April 25, 1962.)

FAR EAST CANNED FISH PACK:

In 1965, the canned fish pack of the "Soviet Far East Fisheries" is expected to be 254 million standard cans (350 grams or 12.3 ounces per can). In 1958, the pack was 110 million cans. (Biblioteka Agitatora, Vladivostok, 1961.)

SAURY FISHERY IN

FAR EAST BEING EXPANDED:

Pacific saury (Cololabis saira) is fast becoming a major species of the Soviet Far Eastern fisheries. Canned saury undoubtedly will become the most important product of the region's fish-canning industry. By 1965, the end of the seven-year plan, the annual pack of canned saury is expected to reach 143 million standard cans. (Rybnoe Khoziaistvo, January 1962.)

The Soviet research vessel Rubtsovsk early this year completed an exploratory fishing trip in the East China Sea where sardines, mackerel, and jacks were taken. Observations were also made on oceanographic and weather conditions. (Unpublished sources.)

NUMBER OF MEN WHALING IN ANTARCTIC INCREASED:

For the 1961/62 Antarctic whaling season the Soviet Union increased the number of men engaged in whaling by an estimated 1,150 persons. This is in marked contrast

with decreases in Norwegian (820 persons) and British (221 persons) personnel. This season's increase in Soviet manpower is due to the fact that the newly-constructed 45,000-ton whale factoryship Sovetskaja Rossiia started its Antarctic operations.

The total Soviet manpower in Antarctic whaling this season was estimated to be 4,050 men, or about 20 percent of the total manpower engaged in whaling in that area. As recently as the 1956/57 season, the Soviet whaling fleet in Antarctica employed only 850 men or 5 percent of the total. (Norsk Hvalfangst-Tidende, No. 2, 1962.)

FOUR FISH-FREEZING MOTHERSHIPS TO BE BUILT IN DENMARK:

In early May 1962, the first of four Soviet fish-freezing and refrigerator mothership vessels was christened the Skryplev in a Copenhagen shipyard. The vessel has a deadweight of 2,600 tons, is about 300 feet long, and a beam of about 53 feet.

The complement of the vessel is not known but it will carry four 25-foot lifeboats, each with a capacity of 53 people. The vessel is not designed for actual fishing operations, but has a stern slipway presumably for taking aboard nets filled with catches made by other vessels. (United States Embassy, Copenhagen, May 24, 1962.)

SOVIET-VIETNAMESE COOPERATION IN FISHERY RESEARCH:

The second Joint Soviet-Vietnamese Research Expedition ended its work in the Gulf of Tonkin late in 1961. The expedition was organized by TINRO (Soviet Pacific Institute for Fishery Research) primarily to determine sardine and tuna populations in the Gulf, though research was also done on groundfish and oceanography.

In addition, a team of Soviet specialists taught Vietnamese fishermen modern fishing and exploratory techniques. The first Joint Soviet-Vietnamese Expedition was organized in 1960. (Rybnoe Khoziaistvo, February 1962.)

OCEANOGRAPHIC ACTIVITIES IN NORTHERN EUROPEAN SEAS, 1962:

In 1962 Soviet investigators plan to make oceanographic observations and investigate

U. S. S. R. (Contd.):

water masses in the northern European seas, the near northern seas, the Baltic Sea, and on fishing grounds of the eastern Atlantic. Investigations will be carried out from vessels of the Hydrometeorological Service and the Fisheries Research Institutes.

Medium fishing trawler types will work in the northern regions and in the Baltic Sea; large fishing trawler types will conduct observations in the Atlantic Ocean. Standard programs within the framework of International Standard Observations will be made in the Baltic Sea. Oceanographic observations will be made at the herring fishing grounds of the Norwegian Sea, at cod fishing grounds of the border region between the Norwegian and Greenland seas up to Jan Mayen and in the border regions between the northern European seas and the North Atlantic.

Investigations of the thermal and dynamic ocean-atmosphere interrelationships and evaluation of predictions of oceanographic conditions, with particular emphasis on fisheries aspects, will be continued. (National Oceanographic Data Center Newsletter, April 30, 1962.)

Note: See Commercial Fisheries Review, June 1962 p. 63.



United Arab Republic (Egypt)

STATUS OF FISHERIES:

Egypt's fisheries, which are under the jurisdiction of the General Organization for the Development of Marine Wealth, remain to be intensively developed. Egypt has a coastline of more than 1,500 miles, one million acres covered by lakes, and the Nile River and its tributaries. The commercial catch in 1960 was approximately 85,000 metric tons, one quarter of which was taken in the Mediterranean and Red Sea and the balance in lakes and rivers. Of the total, 2,500 to 3,000 tons were shrimp, now becoming an important export for Egypt. Value of the 1960 fishery catch was about £10 million. Per capita consumption is estimated to be 4 kilos (8.8 pounds) per year.

Despite the apparent potential of Egyptian fisheries, the United Arab Republic remains a net importer of fish. In 1960, 9,039 metric tons were imported (principally herring, sardines, and tuna) as against 1,856 metric tons

exported. Exports of crustaceans (chiefly shrimp) show continuing increase. From a level of 1,061 metric tons in 1960, those exports rose to 569 metric tons in the first half of 1961, of which 401 metric tons were destined for the United States.

The fishing fleet consists of about 13,000 craft, of which 3,000 are used in sea fishing. Of the total only about 500 are motorized. There were 65,000 licensed fishermen in 1960, including 20,000 boys under 16 years of age. About 200,000 wage-earners are employed in allied industries such as processing, marketing, and transportation, and fishing vessel, sail, and net production.

Shore facilities include five freezing plants with a capacity of 1,500 to 2,000 metric tons of shrimp per year, and a canning plant for sardines and shrimp with an annual capacity of 4 million cans. (United States Embassy, Cairo, report of May 9, 1962.)



United Kingdom

FISHING LIMIT ZONE OF 12 MILES MAY BE ADOPTED:

There are reports that Britain is planning to adopt the 12-mile fishing limit zone, according to the British periodical Fish Trades Gazette, May 26, 1962.

Reports that the Government is planning to extend the British fishing limits to 12 miles were received enthusiastically at many of the inshore British ports. It is understood that details of the proposal are now being worked out and that the new 12-mile fishing zone is likely to be introduced early next year.

* * * * *

ELECTRONIC THAWING OF FROZEN FISH:

Dielectric heating makes it possible to thaw a block of frozen white fish within 15 minutes, almost independently of the block size. Frozen herring can be thawed in 5 minutes. Earlier methods, depending on a gradual thawing from the surface, meant a great strain on the product. Even when flowing water is used that method is lengthy and time-consuming.

Dielectric thawing, developed by the Torry Research Station, Aberdeen, can be adopted

United Kingdom (Contd.):

as a continuous process. It must be very closely controlled, however. In the experiments, radio-frequency generators giving six kilowatts and operating in the range of 36 to 40 mc/sec. were used. The frozen fish is conveyed continuously in between the electrodes, and on the assumption that the electrical current is delivered uniformly and held under certain critical limits, an adjustment can easily be made for fish of different sizes. Above such a critical level the heating very easily becomes uncontrolled and spotty. Certain sections of the fish may readily absorb a larger part of the energy, becoming cooked while other parts of the block remain frozen.

Blocks frozen at sea may easily have an irregular form, which may cause such difficulties.

With dielectric heating it is possible to thaw such blocks at 25° C. (77° F.) within 75 minutes, whereas it takes 18 hours in air under controlled conditions. The investment is US\$28,000 dollars for a plant with a thawing capacity of one metric ton per hour. The cost of thawing is about one-third of the cost of freezing. The method is now commercially employed in a large shore establishment at Grimsby on the river Humber. (*Food Technology*, April 1962.)

Note: See *Commercial Fisheries Review*, June 1961, p. 86.



TRY TUNA SALAD FOR MAIN DISH AT PICNICS

Outdoor picnics in the summertime, whether they are held on the beach, in the mountains, in local parks, or just in your own backyard, can be memorable occasions for the family--particularly if the food has appetite appeal.

The food included in any picnic should be tasty, easy-to-prepare, and energy-giving. Canned tuna, which possesses these qualities, is excellent for picnic use as a main course salad.

Along with tuna salad, the home economists of the U. S. Bureau of Commercial Fisheries suggest potato chips, sliced tomatoes, buttered rolls, fruit, cup cakes, and iced tea or coffee as good accompaniments. All perishable foods for picnic use must be refrigerated, caution the home economists.



TUNA SALAD

2 cans ($6\frac{1}{2}$ or 7 ounces each) tuna
 $\frac{1}{2}$ cup mayonnaise or salad dressing
 1 cup chopped celery
 2 tablespoons chopped sweet pickle
 2 tablespoons chopped onion

2 hard-cooked eggs, chopped
 $\frac{1}{4}$ teaspoon salt
 Dash pepper
 Lettuce
 1 hard-cooked egg, sliced

Drain tuna. Break into large pieces. Combine all ingredients except lettuce and eggs. Serve on lettuce; garnish with egg slices. Serves 6.



FEDERAL ACTIONS



Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

HEARING EXAMINER DESIGNATED FOR PUBLIC HEARING ON STANDARD OF IDENTITY FOR FISH FLOUR:

A public hearing on a definition and standard of identity for fish flour or fish protein concentrate was announced by the U. S. Food and Drug Administration in the Federal Register of April 28, 1962. The notice of the hearing stated an examiner was to be designated later to conduct the hearing: Horace H. Robbins, a qualified hearing examiner, employed in the Social Security Administration under the supervision of the Director and Chairman of the Appeals Council, has been designated to conduct the hearing. Designation of the examiner was reported in the Federal Register of May 24, 1962, by the Food and Drug Administration.

* * * * *

PUBLIC HEARING POSTPONED ON STANDARD OF IDENTITY FOR FISH FLOUR:

Postponement of the public hearing on a definition and standard of identity for fish flour or fish protein concentrate was announced by the U. S. Food and Drug Administration in the Federal Register of June 9, 1962.

In response to requests from Senator Douglas, Harold Putnam on behalf of Vio Bin Corporation, and Vincent A. Kleinfeld on behalf of Gulf Menhaden Company, the Agency on June 6 gave notice that the prehearing conference scheduled for June 12, 1962, and the hearing scheduled for June 18, 1962, would not be held until further notice. This was without prejudice to the objectors' requesting that the hearing be rescheduled at a later date. The purpose of the postponement is so that certain studies of the product may be completed.

The hearing was to cover points in a regulation published last January 25 which would have required that fish flour be made from edible, cleaned fish after discarding the heads, tails, fins, viscera and intestinal contents. The January 25 order has been stayed.



Department of the Interior

FISH AND WILDLIFE SERVICE

BUREAU OF COMMERCIAL FISHERIES

NEW FEES FOR FISHERY PRODUCTS INSPECTION SERVICES:

New fees and charges for fishery products inspection services of the U. S. Department of the Interior went into effect on June 1, 1962. Title 50 of the Code of Federal Regulations is changed by amendment, addition, and deletion of sections that specifically apply to fees and charges for fishery inspection services. The new fees and regulations were published in the May 19 Federal Register. The purpose of the changes is to achieve a higher degree of uniformity in the assessment of fees and the method of charging for services rendered. The changes are necessary to offset the normal costs to the Bureau of Commercial Fisheries for rendering the voluntary inspection service on fishery products.

This is the first official proposed change in the rate of inspection fees since the Bureau assumed responsibility for the conduct of the inspection service from the U. S. Department of Agriculture in July 1958. The proposed changes in the rates are a reflection of the increased operating costs to the Bureau in maintaining the program on a sound and self-supporting basis as required under the authority by which this program is conducted. All future proposed changes in rates necessitated by Federal pay acts and increased operating costs will be announced in the Federal Register.

For continuous inspections, the new fee for regular time will be \$4.20 per hour; for overtime \$5.00 per hour. Also included is a schedule of lot inspection fees for officially and unofficially drawn samples.

Interested persons had until April 6, 1962, to submit written comments, suggestions, or

objections on the changes. Two comments were received and considered, and the proposed amendments as published in the March 6, 1962, Federal Register were adopted without change. The new regulations as they appeared in the May 19, 1962, Federal Register follow:

Title 50—WILDLIFE AND FISHERIES

Chapter II—Bureau of Commercial Fisheries, Fish and Wildlife Service, Department of the Interior

SUBCHAPTER C—PROCESSED FISHERY PRODUCTS, PROCESSED PRODUCTS THEREOF, AND CERTAIN OTHER PROCESSED FOOD PRODUCTS

PART 260—INSPECTION AND CERTIFICATION

Fees and Charges

On page 2156 of the FEDERAL REGISTER of March 6, 1962, there was published a notice and text of proposed amendments to part 260 of Title 50, Code of Federal Regulations. The purpose of these changes is to achieve a higher degree of uniformity in the assessment of fees and the method of charging for inspection services rendered under the authority vested in the Secretary of the Interior by section 6(a) of the Fish and Wildlife Act of 1956 (16 U.S.C. 742e(a)). The amounts are deemed to be necessary to offset the normal costs to the Bureau of Commercial Fisheries for rendering such inspection service.

Interested persons were given until April 6, 1962, to submit written comments, suggestions, or objections with respect to the proposed changes. Two comments were received and considered and the proposed amendments are hereby adopted without change and are set forth below. These amendments shall become effective June 1, 1962.

Dated: May 14, 1962.

STEWART L. UDALL,
Secretary of the Interior.

1. Section 260.69 is amended to read as follows:

§ 260.69 Payment of fees and charges.

Fees and charges for any inspection service shall be paid by the interested party making the application for such service, in accordance with the applicable provisions of the regulations in this part, and, if so required by the person in charge of the office of inspection serving the area where the services are to be performed, an advance of funds prior to rendering inspection service in an amount suitable to the Secretary, or a surety bond suitable to the Secretary, may be required as a guarantee of payment for the services rendered. All fees and charges for any inspection service, performed pursuant to the regulations in this part, shall be paid by check, draft, or money order made payable to the Bureau of Commercial Fisheries. Such check, draft, or money order shall be remitted to the appropriate Regional or Area office serving the geographical area in which the services are performed,

within ten (10) days from the date of billing, unless otherwise specified in a contract between the applicant and the Secretary, in which latter event the contract provisions shall apply.

2. Section 260.70 is amended to read as follows:

§ 260.70 Schedule of fees.

(a) Unless otherwise provided in a written agreement between the applicant and the Secretary, the fees to be charged and collected for any inspection service performed under the regulations in this part at the request of the United States, or any agency or instrumentality thereof, shall be in accordance with the applicable provisions of §§ 260.70 to 260.79.

(b) Unless otherwise provided in the regulations in this part, the fees to be charged and collected for any inspection service performed under the regulations in this part shall be based on the applicable rates specified in this section for the type of service performed.

(1) Continuous inspection.	Per hour
Regular time.....	\$4.20
Overtime.....	5.00

Applicants shall be charged at an hourly rate of \$4.20 per hour for regular time and \$5 per hour for overtime in excess of 40 hours per week for services performed by inspectors assigned to plants operating under continuous inspection. Applicants shall be billed monthly at a minimum charge of 8 hours per working day plus overtime, when appropriate, for each inspector. A minimum yearly charge of 260 days will be made for each inspector permanently assigned to each plant.

(2) Lot inspection—officially and unofficially drawn samples.

For lot inspection services performed between the hours of 7:00 a.m. and 5 p.m. of any regular workday—\$6 per hour.

For lot inspection services performed between the hours of 5 p.m. and 7 a.m. of any regular workday—\$9 per hour.

For lot inspection services performed on Saturday, Sunday, and National legal holidays—\$9 per hour.

The minimum fee to be charged and collected for inspection of any lot of product shall be \$3.

(c) Fees to be charged and collected for lot inspection services furnished on an hourly basis shall be based on the actual time required to render such service including, but not limited to, the travel, sampling, and waiting time required of the inspector, or inspectors, in connection therewith, at the rate of \$6 per hour for each inspector, except as provided in paragraph (b) (2) of this section.

3. Section 260.71 is amended to read as follows:

§ 260.71 Inspection services performed on a resident basis.

Fees to be charged and collected for any inspection service, other than appeal inspection, on a resident basis shall be those provided in § 260.70 and shall include such items as listed in this section as are applicable. The fees to be charged for appeal inspections shall be as provided in § 260.74.

(a) A charge for per diem and travel costs incurred by any inspector whose services are required for relief purposes when the regular inspector is on annual, sick, or military leave: *Provided*, That, with regard to military leave, charges for per diem and travel costs incurred by a relief inspector shall not exceed 15 days per calendar year.

(b) A charge to cover the actual cost to the Bureau of Commercial Fisheries of the travel (including the cost of movement of household goods and dependents), and per diem with respect to each inspector who is transferred (other than for the convenience of the Bureau of Commercial Fisheries), from an official station to the designated plant.

(c) A charge of \$6 per hour plus actual costs to the Bureau of Commercial Fisheries for per diem and travel costs incurred in rendering services not specifically covered in this section; such as, but not limited to, initial plant surveys.

4. Section 260.72 is amended to read as follows:

§ 260.72 Fees for inspection service performed under cooperative agreement.

The fees to be charged and collected for any inspection or similar service performed under cooperative agreement shall be those provided for by such agreement.

5. Section 260.73 is amended to read as follows:

§ 260.73 Disposition of fees for inspections made under cooperative agreement.

Fees for inspection under a cooperative agreement with any State or person shall be disposed of in accordance with the terms of such agreement. Such portion of the fees collected under a cooperative agreement as may be due the United States shall be remitted in accordance with § 260.69.

§ 260.75 [Deletion]

6. Section 260.75 is deleted.

7. Section 260.76 is amended to read as follows:

§ 260.76 Charges based on hourly rate, not otherwise provided for in this part.

When the appropriate Regional or Area Director determines that any inspection or related service rendered is such that charges based upon the foregoing sections are clearly inapplicable, charges may be based on the time consumed by the inspector in performance of such inspection service at the rate of \$6 per hour.

8. Section 260.81 is added:

§ 260.81 Readjustment and increase in hourly rates of fees.

The hourly rates of fees to be charged for inspection services will be subject to review and reevaluation for possible readjustment not less than every 3 years: *Provided*, That, the hourly rates of fees to be charged for inspection services will be immediately reevaluated as to need for readjustment with each Federal pay act increase.

* * * * *

PROCESSOR ACCOUNTABLE FOR REMOVAL OF USDI SHIELDS FROM MISLABELED FISHERY PRODUCTS PACKAGES:

The Department of the Interior has announced a change in the regulations for United States standards for grades of processed fishery products by adding a new provision which requires accountability by the processor for the removal or stripping of official United States Department of the Interior (USDI) shields from packages of mislabeled fishery products. The change was published in the Federal Register of June 9, 1962.

The proposed change was first published in the February 24, 1962, Federal Register, and interested parties had until March 24, 1962, to submit written comments, suggestions, or objections. One comment was received and considered. Accordingly, a minor change has been adopted to clarify that part relating to the removal of labels bearing inspection marks.

The new procedure for removal of labels bearing inspection marks as published in the June 9 Federal Register follows:

Title 50—WILDLIFE AND FISHERIES

Chapter II—Bureau of Commercial Fisheries, Fish and Wildlife Service, Department of the Interior

SUBCHAPTER C—PROCESSED FISHERY PRODUCTS, PROCESSED PRODUCTS THEREOF, AND CERTAIN OTHER PROCESSED FOOD PRODUCTS

PART 260—INSPECTION AND CERTIFICATION

Approved Identification

On page 1771 of the FEDERAL REGISTER of February 24, 1962, there was published a notice and text of a proposed amendment to part 260 of Title 50, Code of Federal Regulations, by the addition of a new paragraph (e) to § 260.86.

The purpose of the addition of the new provision is to require accountability by the processor for the removal or stripping of official United States Department of the Interior (USDI) shields

from packages of mislabeled fishery products.

Interested persons were given until March 24, 1962, to submit written comments, suggestions, or objections to the proposed amendment. One comment was received and considered. Accordingly, a minor change has been adopted to further clarify § 260.86(e) relating to the removal of labels bearing inspection marks.

The proposed amendment is hereby adopted with the minor change and is set forth below. This amendment shall become effective 30 days after the date of publication of this notice in the FEDERAL REGISTER.

Dated: June 5, 1962.

STEWART L. UDALL,
Secretary of the Interior.

§ 260.86 Approved identification.

* * * * *

(e) *Removal of labels bearing inspection marks.* At the time a lot of fishery products is found to be mislabeled and the labels on the packages are not removed within ten (10) consecutive calendar days, the following procedure shall be applicable:

(1) The processor, under the supervision of the inspector, shall clearly and conspicuously mark all master cases in the lot by means of a "Rejected by USDI Inspector" stamp provided by the Department.

(2) The processor shall be held accountable to the Department for all mislabeled products until the products are properly labeled.

(3) Clearance for the release of the relabeled products shall be obtained by the processor from the inspector.



Department of State

**TRADE AGREEMENT CONCESSIONS
EFFECTIVE JULY 1, 1962:**

Appropriate international action was taken to bring into effect on July 1, 1962, United States schedules of tariff concessions resulting from recently completed negotiations with the European Economic Community and a number of individual countries, the Department of State announced.

Pursuant to the provisions of trade agreements legislation most of the concessions will become effective in 2 or 3 stages and in such cases the rate that became effective on July 1 was that provided for during the first stage.

Information was received to the effect that the concessions negotiated with the United States by Peru and Portugal were already in effect, and that those negotiated by Denmark, New Zealand, and Sweden would be put

into effect on July 1, 1962. It was understood that some other parties to these agreements would also put their concessions into effect on July 1 or shortly thereafter, and that the others will probably be put into effect some time during the fall of 1962 or by the beginning of 1963. Under all the agreements the United States has the right to withdraw its concessions in the event of unreasonable delay by the other parties to the agreements.

An analysis of the concessions exchanged in these interim bilateral agreements, except that with Haiti under which the United States would reduce the duty on vertivert oil from 5 percent to 3 percent ad valorem, was released by the Department of State on March 7, 1962 (State Department publication 7349 and supplement). All of the agreements except those with Haiti and Japan were proclaimed by Proclamation 3468 of April 30, 1962. As was indicated in the White House press release accompanying that Proclamation, it was anticipated that a supplementary Proclamation relating to agreements not included in the April 30 Proclamation would be issued. Moreover, the Proclamation of April 30, 1962, provides that the President shall formally notify the Secretary of the Treasury of the effective dates of the concessions in the United States schedules to these agreements.

The April 30 Proclamation also proclaimed compensatory agreements with the Benelux countries, Denmark, Germany, Italy, Japan, and the United Kingdom, and provided that the tariff concessions in the United States schedules to those agreements would become effective July 1, 1962, unless the President notified the Secretary of the Treasury of an earlier date.



White House

PRESIDENT PUTS INTO EFFECT RESULTS OF 1960-61 GATT NEGOTIATIONS:

A proclamation giving effect to the United States tariff concessions and other results from the 1960-61 General Agreement on Tariffs and Trade negotiations was issued by the President on April 30, 1962. The proclamation was published in the May 3, 1962, Federal Register. The results of the GATT negotiations were originally announced on March 7, 1962.

The concessions resulted from reciprocal negotiations with the European Economic Community, Austria, Canada, Denmark, Finland, Israel, New Zealand, Norway, Pakistan, Peru, Portugal, Sweden, Switzerland, and the United Kingdom, and from compensatory negotiations with the Benelux countries, Denmark, Germany, Italy, Sweden, Japan, and the United Kingdom.

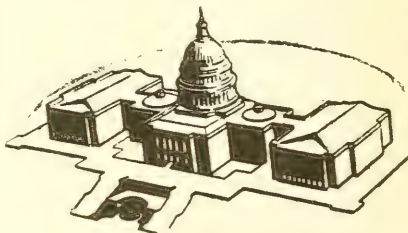
The reciprocal agreements provide that the concessions in the United States schedules will take effect 30 days after the United States formally notifies the countries with which they were negotiated, and under the proclamation, the effective date will be published in the Federal Register.

According to the proclamation, it is expected that the concessions in the agreements will become effective on July 1. It is also expected that another proclamation will be issued in order to make effective on the same date concessions in agreements with certain other countries. The compensatory concessions will become effective on July 1, 1962, unless the President decides on an earlier date. It is reported that in accordance with trade agreement legislation, most of the reductions in United States import duties will be made in two stages, the second stage becoming effective after the first stage has been in effect for one year.



Eighty-Seventh Congress (Second Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Intro-



duction, referral to committees, pertinent legislative actions by the House and Senate,

as well as signature into law or other final disposition are covered.

AMERICAN SAMOA INCLUDED IN CERTAIN LAWS: S. 2440 (Long) introduced in the Senate on August 18, 1961, to extend the application of certain laws to American Samoa; referred to the Committee on Interior and Insular Affairs. Companion bills H.R. 10049 (Aspinal) and H.R. 10062 (O'Brien) were introduced in the House on February 5, 1962; both referred to the Committee on Interior and Insular Affairs. Bills would make available to American Samoa the technical assistance, as needed, of the various Federal departments and agencies and to extend to American Samoa several Federal assistance programs presently available in other parts of the United States and its territories.

The House Committee on Interior and Insular Affairs on March 28, 1962, reported with amendment (H. Rept. No. 1536) H.R. 10062. The House on April 2, 1962, considered and passed, under suspension of the rules, H.R. 10062 amended.

The Senate Committee on Interior and Insular Affairs on May 9, 1962, reported (S. Rept. 1478) favorably on H.R. 10062 with an amendment in the nature of a substitute, and recommended that the bill, as amended, do pass. The bill as amended would authorize the Secretary of the Interior to request Federal departments, corporations, or agencies to extend, without reimbursement, scientific and technical assistance to promote the welfare of the territory. Examples of the sorts of technical assistance which may be called for from time to time include revision of Samoa's tax structure, education, agricultural and fisheries production and marketing, harbor improvement, public utilities, and land planning and zoning. A limitation of an aggregate of \$150,000 in any one fiscal year is provided. Section 2 of the bill extends to American Samoa the provisions of the Vocational Education Act of 1946, as amended. That act authorizes the annual appropriation of specified sums of money for vocational education in five specified fields (agriculture, home economics, trades and industry, distributive occupations, and fishing trades). The money is apportioned among the various States, Puerto Rico, the District of Columbia, and Guam. The funds must be matched 100 percent.

The Senate on May 17, 1962, passed, with amendment, H.R. 10062. Bill sent back to the House for concurrence on Senate amendment.

EXEMPT TRANSPORTATION OF AGRICULTURAL AND FISHERY PRODUCTS: The House Committee on Interstate and Foreign Commerce began hearings June 26, 1962, on H.R. 11583, to exempt certain carriers from minimum rate regulation in the transportation of bulk commodities, agricultural and fishery products, and passengers, and for other purposes.

The Senate Committee on Commerce held hearings June 27-29, 1962, on S. 3243, a companion bill to H.R. 11583.

FISHERIES PROGRAM: Senator Benjamin Smith of Massachusetts (Congressional Record, May 24, 1962, pp. 8496-8505) presented to the Senate on May 24 a program for the Nation's fisheries. In his statement to the Senate, the Massachusetts Senator pointed out the depressed condition of the domestic fishing industry, the catch of fish by the leading nations of the world, how the fisheries of other nations have progressed fur-

ther than in the United States, and the government aid to the fisheries of other nations. The statement continues, in part: The American fisheries are important to the economic development of the country, but there is a desperate need for modernization which cannot take place without Federal aid. The Soviets with their new and modern fishing fleet have recently placed ahead of the United States in world fishery production. The basic problem pervading every part of our fisheries is backwardness of technology, which is most prevalent in the following areas: (1) finding and harvesting the fish; (2) control of quality; (3) marketing; and (4) processing. The Senator states: "I think Congress should pass a program that will help save the industry from further decline and enable it to compete with modern producers. In addition, the Government should take steps to make our fisheries an effective weapon in our battle against hunger in the underdeveloped nations of the world..." Senator Smith proposes the following 7-point program: (1) Overhaul of the Vessel Subsidy Act to allow greater Government participation in subsidies to boatowners and to make a great segment of the fishing industry eligible for assistance; (2) We should provide Federal loans to fish processors to help them modernize their plants; (3) We should expand research into the finding, catching, processing, and marketing of fish by enlarging present research programs, and providing new equipment for the Bureau of Commercial Fisheries; (4) We should strengthen state commercial fisheries programs by a system of Federal matching grants; (5) We should construct a modern stern-chute factory-trawler for processing fish at sea; (6) We should obtain approval of fish protein for domestic consumption by the Food and Drug Administration; and (7) We should construct a pilot plant for manufacture of fish protein on land and sea, aboard ships. Senators Talmadge, Saltonstall, Young, Morse, Long, Robertson, Holland, Douglas, and Pell also commented on the nation's fisheries and supported Senator Smith's statement.

FISH PROTEIN CONCENTRATE: On June 23, 1962, Senator Douglas was given unanimous consent to have printed in the Congressional Record (June 23, 1962, pp. 10648-10649) the correspondence between his office, the Department of the Interior, and the Food and Drug Administration on the subject of postponing the June 18 public hearings on fish protein concentrate. The Senator stated "I am very anxious that this product's merits be thoroughly explored before the American public; and I look forward to reading the final report from the National Academy of Sciences on the quality of the product..."

INTERIOR APPROPRIATIONS FY 1963: The Senate on May 17, 1962, passed over H.R. 10802, making appropriations for the Department of the Interior and related agencies for the fiscal year ending June 30, 1962. Included are funds for the Fish and Wildlife Service and its two bureaus--Commercial Fisheries and Sport Fisheries and Wildlife.

The Senate, June 12, 1962, passed, with amendments, H.R. 10802. The amended bill has major increases of \$811,500 for the Bureau of Commercial Fisheries and \$4,811,800 for the Bureau of Sport Fisheries and Wildlife. The Senate insisted on its amendments, asked for a conference with the House, and appointed as conferees Senators Hayden, Russell, McClellan, Byrd (West Virginia), Bible, Mundt, Young (North Dakota), and Dworshak.

MEDICAL CARE FOR VESSEL PERSONNEL: The Senate Committee on Commerce, in executive session, on May 21, 1962, ordered favorably reported S. 367,

providing medical care for persons engaged on board vessels, amended.

The Senate on June 5, 1962, received the report (S. Rept. No. 1541) from the Committee on Commerce on S. 367 with amendments.

S. Rept. 1541, Medical Care--Fishing Boat Owners (June 5, 1962, Report of the Committee on Commerce, United States Senate, 87th Congress, 2nd Session, to accompany S. 367), 16 pp., printed, Committee reported bill favorably, with amendments, and recommended passage. Contains purpose of the bill, legislative history, cost, committee amendment, and agencies' comments. The purpose of the committee amendment is to include the owner-operators of fishing boats (which are registered, licensed, or enrolled under the laws of the United States) as recipients of Public Health Service hospital and medical care. Also made eligible for such care by the committee amendment would be persons employed or self-employed as fishermen on board commercial fishing vessels, even in cases where their employment may not be directly related to the care, preservation, and navigation of the vessel. It would restore to self-employed U. S. fishermen eligibility for medical care in hospitals, out-patient clinics, and other medical facilities of the Public Health Service in the event of illness or injury incurred while engaged in their occupation. The amendment, however, would exclude passengers, guests, or others on board vessels who are not regular members of the crew. The amendment is based on the suggestions offered at the committee hearings by witnesses from the Department of Health, Education, and Welfare, the Department of the Interior, and by other witnesses.

The Senate, on June 8, 1962, passed S. 367 as amended. The House on June 11, 1962, received the bill passed by the Senate, and referred it to the Committee on Interstate and Foreign Commerce.

NATIONAL FISHERIES CENTER AND AQUARIUM: The Subcommittee on Public Buildings and Grounds of the Senate Committee on Public Works held hearings on June 15, 1962, on H.R. 8181, to authorize the Secretary of the Interior to construct a National Fisheries Center and Aquarium in the District of Columbia.

NEW ENGLAND FISHERIES: Congressman Clem Miller of California had printed in the Appendix (p. A3786) of the May 22, 1962, Congressional Record, an article titled "Asleep in the Deep" which describes the failing New England commercial fishing industry.

OYSTER BROOD STOCK PURCHASES: The Merchant Marine and Fisheries Subcommittee of the Senate Committee on Commerce met on June 25, 1962, on H.R. 7336, to promote the production of oysters by propagation of disease-resistant strains and for other purposes.

PACIFIC FISHERIES: Congressman Miller, of California, had printed in the Appendix (p. A3791) of the May 22, 1962, Congressional Record, a comprehensive plan for Pacific Coast fisheries submitted to Congress by the Alaska Fishermen's Union. In part, the statement points out: "... To accomplish basic necessities of the American fishing fleet and a more balanced position in our economic structure for U. S. fishermen, requires consideration first of the need to stabilize fair-trade practices in the sale and marketing of their products. It follows that our U. S. marketing and processing industry will likewise become stable in their

trade, with conditions improved for the fishermen who supply them with products of the sea..."

PACIFIC MARINE FISHERIES COMPACT: S. 3431 (Bartlett and others) introduced in the Senate on June 18, 1962, to consent to the amendment of the Pacific Marine Fisheries Compact and to the participation of certain additional States in such compact in accordance with the terms of such amendment; referred to the Committee on Commerce. The change consists of an addition to the existing compact which provides, in part: "The States of Alaska or Hawaii, or any State having rivers or streams tributary to the Pacific Ocean may become a contracting State by enactment of the Pacific Marine Fisheries Compact." Upon congressional ratification of the compact, Alaska, Hawaii, and Idaho will be eligible for membership. California, Oregon, and Washington are now members of the compact and of the Pacific Marine Fisheries Commission created by the compact. A companion bill, H.R. 12205 (Rivers), was introduced in the House on June 19, 1962; referred to the Committee on Merchant Marine and Fisheries.

SALTONSTALL-KENNEDY ACT: The House on June 5 and the Senate on June 6, 1962, received a letter from the Secretary of the Interior, transmitting, pursuant to law, the annual report on the operations of the Bureau of Commercial Fisheries under the Saltonstall-Kennedy Act, for the fiscal year 1960; referred to the Committee on Commerce.

SCIENCE AND TECHNOLOGY COMMISSION: Create a Commission on Science and Technology (Hearing before the Committee on Government Operations, United States Senate, 87th Congress, 2nd Session, Part I), 101 pp., printed. Contains hearing held May 10, 1962, on S. 2771 to provide for the establishment of a Commission on Science and Technology; excerpts from various scientific magazines; and testimony given by Congressmen and industry personnel.

SCIENCE AND TECHNOLOGY OFFICE: On June 8, 1962, by order of the President, Reorganization Plan No. 2 of 1962 went into effect (published in the Federal Register, June 8, 1962). It establishes the Office of Science and Technology as a new unit within the Executive Office of the President; places at its head a Director appointed by the President and by the advice and consent of the Senate and provides for a Deputy Director similarly appointed; and transfers to the Director certain functions of the National Science Foundation. The principal function of the new Office is to coordinate and evaluate the research and development programs of the various Federal Government agencies in order to eliminate duplication. The Director of the new Office will be conferred certain functions now performed by the National Science Foundation in order to enable the Director to assist and advise the President in achieving coordinated Federal policies of the promotion of basic research and education in the sciences and the authority to evaluate scientific research programs undertaken by agencies of the Federal Government. Also, the plan provides for certain reorganizations with the Foundation to strengthen the position of Director in that agency.

SHELLFISH PROCESSING EXEMPTION FROM MINIMUM WAGE: Exemption to Shellfish Industry Under Fair Labor Standards Act (Hearings before a Special Subcommittee on Labor of the Committee on Education and Labor, House of Representatives, 87th Congress, 2nd Session on H.R. 8927 and H.R. 8932), 57 pp., printed. Contains the hearing held February 16, 1962 on H.R.

8927 and H.R. 8932, to amend the Fair Labor Standards Act of 1938 to continue in effect the exemptions for shellfish processing as contained in such act prior to the Fair Labor Standards Amendments of 1961. Statements and letters were presented by Federal officials and industry.

TARIFF CLASSIFICATION RESTATEMENT IN TARIFF ACT OF 1930: The President on May 24, 1962, signed H.R. 10607, to amend the Tariff Act of 1930 and certain related laws to provide for the restatement of the tariff classification provisions, and for other purposes (P. L. 87-456). It will accomplish the following: (1) Establish schedules of tariff classification which will be logical in arrangement and terminology and adapted to the changes which have occurred since 1930 in the character of importance of articles produced in and imported into the United States and in the markets in which they are sold. (2) Eliminate anomalies and illogical results in the classification articles. (3) Simplify the determination and application of tariff classifications.

TRADE EXPANSION ACT OF 1962: Trade Expansion Act of 1962 (Hearings before the Committee on Ways and Means, House of Representatives, 87th Congress, 2nd Session), printed in 6 parts, Part I, 670 pp.; Part II, 766 pp.; Part III, 774 pp.; Part IV, 742 pp.; Part V, 774 pp.; and Part VI, 730 pp. Contains hearings held March 12, 13, 14, 16, 19, 20, 21, 22, 23, 26, 27, 30, April 2, 3, 4, 5, 6, 9, 10, and 11, 1962, on H.R. 9900, to promote the general welfare, foreign policy, and security of the United States through international trade agreements and through adjustment assistance to domestic industry, agriculture, and labor, and for other purposes; H. Doc. No. 314, the Reciprocal Trade Agreements Program, a message from the President of the United States; a section-by-section analysis as prepared by the executive branch; and testimony given by Congressmen, personnel of various Federal and State agencies and industry people.

H.R. 11970 (Mills), introduced in the House on June 4, 1962, to promote the general welfare, foreign policy, and security of the United States through international trade agreements and through adjustment assistance to domestic industry, agriculture, and labor, and for other purposes. Introduced as directed by the House Committee on Ways and Means as a clean bill in lieu of H.R. 9900. The Committee met in executive session on June 4, 1962, and ordered H.R. 11970 reported favorably to the House. New bill grants the President nearly all of the tariff-making authority in the original bill, H.R. 9900. Period covered is June 30, 1962-July 1, 1967. New bill would permit tariff reduction on canned foods and foods of agricultural origin to zero and the reduction of tariffs on all types of fishery products (including canned) by as much as 50 percent. In place of the so-called "peril point," new pre-negotiation safeguards would be established for determining the products on which U. S. tariffs should be reduced. Also, the "escape clause" provision of existing law, under which tariff protection may be sought by those suffering injury from imports, would be repealed. In its place would be created a new program of adjustment assistance to industries, firms, and workers injured by imports as a result of tariff concessions. In helping firms and workers adjust to import competition, tariff relief would be authorized on a temporary basis as one form of assistance. Bill would require President to take all steps in his power to end unjustifiable foreign import restrictions, such as variable import fees, which impair the value of

tariff commitments made to the United States. In reciprocal negotiations, the bill would authorize the President to reduce tariff rates existing on July 1, 1962, by as much as 50 percent, and to eliminate all tariffs of no more than 5 percent ad valorem or its equivalent. It would seem that fishery products would fall under either of these provisions. Other provisions for tariff reduction are also included. These refer to negotiations with the Common Market on agricultural products and on tropical agricultural and forestry products. Tariff reductions would be made effective in five equal annual stages, except for reductions and eliminations of duties on tropical products.

The House on June 12, 1962, received the report (H. Rpt. 1818) from the Committee on Ways and Means on H.R. 11970, with amendment. Referred to the Committee of the Whole House on the State of the Union.

H. Rept. 1818, Trade Expansion Act of 1962 (Report of the Committee on Ways and Means, House of Representatives, 87th Congress, 2nd Session, to accompany H.R. 11970), 107 pp., printed. The Committee reported the bill favorably and recommends passage with amendments. The purposes of the bill are: (1) To extend the authority of the President to enter into foreign trade agreements from July 1, 1962, through June 30, 1967; (2) To authorize the President to proclaim, subject to certain conditions and limitations, such modification or continuance of any existing duty or other import restriction, such continuance of existing duty-free or excise treatment, or such additional import restrictions as he determines to be required or appropriate to carry out any such trade agreement; and (3) To authorize, in appropriate circumstances, adjustment assistance to industries, firms, and workers who may be seriously injured, or threatened with serious injury, by increased imports resulting from trade agreement concessions. The report also contains a general statement; principal features of the bill; reasons for the bill; general description of the bill; technical explanation of the bill; and various statements of Congressmen.

H.R. 12300 (Dent) and H.R. 12302 (Lennon) introduced in the House on June 26, 1962; both referred to the Committee on Ways and Means.

The Committee on Rules on June 26, 1962, introduced H. Res. 712 for consideration of H.R. 11970. The Committee on the same day reported (H. Rept. No. 1924) on H. Res. 712, for consideration of H.R. 11970, a bill to promote the general welfare, foreign policy, and security of the United States through international trade agreements and through adjustment assistance to domestic industry, agriculture, and labor, and for other purposes; without amendment. The resolution provides that all points of order against H.R. 11970 are waived; after general debate, confined to the bill and not to exceed 8 hours, the bill shall be considered as having been read for amendment; amendments can be offered only by direction of Committee on Ways and Means and are not subject to amendment; and only one motion to recommitt will be allowed.

TRANSPORTATION ACT OF 1962: The Senate Committee on Commerce held hearings June 27-29, 1962, on S. 3242, to provide for strengthening and improving the national transportation system, and for other purposes.

The House Committee on Interstate and Foreign Commerce began hearings June 26, 1962, on H.R. 11584, a companion bill to S. 3242.

TUNA CONVENTION ACT: The Senate Subcommittee on Merchant Marine and Fisheries of the Committee on Commerce concluded hearings on May 24, 1962, on S. 2568, to extend the regulatory authority of the Federal and State agencies concerned under the terms of the Convention for the establishment of an Inter-American Tropical Tuna Commission, signed at Washington, May 31, 1949, and for other purposes. Testimony was given by various agencies and industry personnel.

VESSEL COLLISION LIABILITY: The Senate Committee on Commerce met in executive session on May 23, 1962, and ordered reported S. 2313, to unify apportionment of liability in cases of collision between vessels, and related casualties, with amendment. Establishes provisions under which compensation for damages shall be settled after a collision between vessels, in whatever waters the collision takes place.

The Senate on June 15, 1962, received report (S. Rept. 1603) from the Committee on Commerce on S. 2313 with amendments.

Liability in Collisions Between Vessels (Hearings before the Merchant Marine and Fisheries Subcommittee of the Committee on Commerce, United States Senate, 87th Congress, 2nd Session on S. 2313 to unify apportionment of liability in cases of collision between vessels and related casualties and S. 2314 to limit the liability of shipowners, and for other purposes, March 1 and 2, 1962), 270 pp., printed. Contains statements given at the hearings by Congressmen, Federal officials, and industry people; and the reports from Federal agencies.

VESSEL OWNERS LIABILITY: H.R. 14840 (Ashley) introduced in the House on May 22, 1962, to limit the liability of shipowners, and for other purposes; referred to the Committee on Merchant Marine and Fisheries. Similar to other bills previously introduced.

On May 23, 1962, the Senate Committee on Commerce, in executive session, ordered reported with amendment S. 2314, to limit the liability of shipowners, and for other purposes. The owner of a vessel may limit his liability, and the liability of his vessel, with respect to claims arising from any of several occur-

rences, unless the occurrence giving rise to the claim resulted from actual fault or privity of the owner. Would include all seagoing vessels and all vessels used on lakes or rivers or in inland navigation, including pleasure yachts, tugs, towboats, towing vessels, tank vessels, fishing vessels, or their tenders, canal boats, scows, car floats, barges, lighters, and all non-descript self-propelled and nonself-propelled vessels.

The Committee on Commerce reported (S. Rept. 1602) on June 15, 1962, to the Senate S. 2314.

WATER POLLUTION CONTROL ADMINISTRATION: H.R. 11994 (Blatnik) introduced in the House on June 5, 1962, to amend the Federal Water Pollution Control Act by creating a Federal Water Pollution Control Administration and for other purposes; referred to the Committee on Public Works.

H.R. 12222 (Giaino) introduced in House June 20, 1962, to amend the Federal Water Pollution Control Act by creating a Federal Water Pollution Control Administration and for other purposes; referred to the Committee on Public Works. Identical to H.R. 11994 introduced in the House on June 5, 1962.

WATER RESOURCES: Policies, Standards, and Procedures in the Formulation, Evaluation, and Review of Plans for Use and Development of Water and Related Land Resources (Prepared under the direction of the President's Water Resources Council, together with a statement by Senator Clinton P. Anderson of New Mexico), Senate Doc. 97, 15 pp., printed under the authority of S. Res. 342, May 29, 1962. It contains the agreement between the Secretary of the Army, the Secretary of Health, Education, and Welfare, and the Secretary of the Interior, which establishes the Executive policies, standards, and procedures for uniform application in the formulation, evaluation, and review of comprehensive river basin plans and individual project plans for use and development of water and related land resources. The six main points in the agreement are: (1) purpose and scope, (2) objectives of planning, (3) planning policies and procedures, (4) review of comprehensive plans and project proposals, (5) standards for formulation and evaluation of plans, and (6) relation to cost allocation, reimbursement and cost-sharing policies, standards, and procedures.



TRANSPLANTED GULF OF CALIFORNIA FISH IN SALTON SEA NOW ABUNDANT

Salton Sea in 1961 was reported having an abundant stock of sargo, a perch-like ocean fish transplanted from the Gulf of California by the California Department of Fish and Game. Gill-net samples early in 1961 showed that sargo averaging $\frac{1}{2}$ pound but going to 2 pounds were abundant in all areas of the Sea. And every one of the millions of sargo in Salton Sea now is a descendant of a total of only 65 transplanted there in 1951. (Outdoor California, April 1961.)

FISHERY INDICATORS

CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

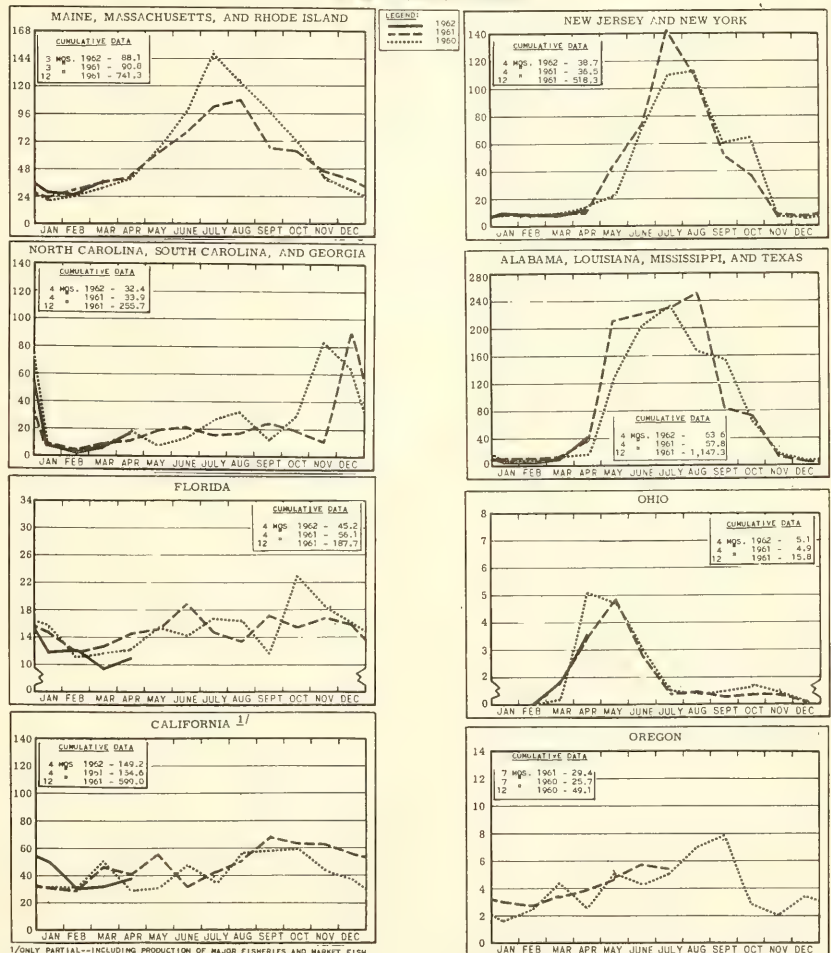
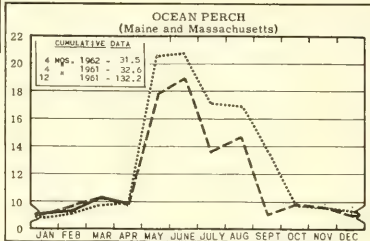
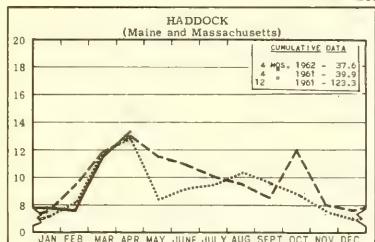
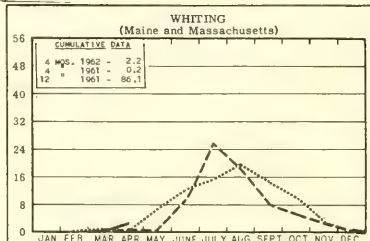
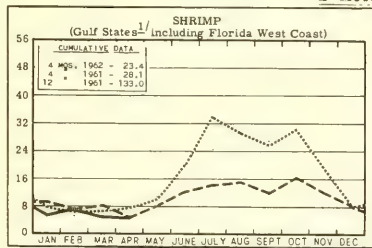


CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

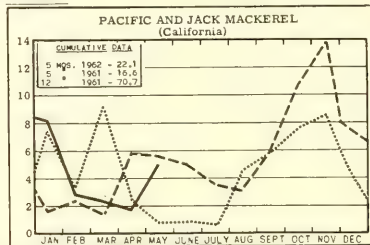
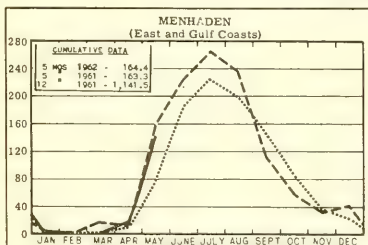


In Millions of Pounds



^{1/4} & A LA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons



In Thousands of Tons

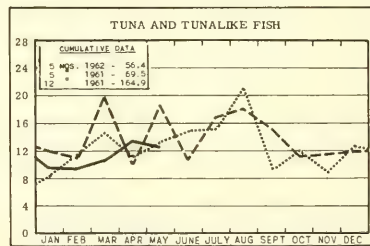
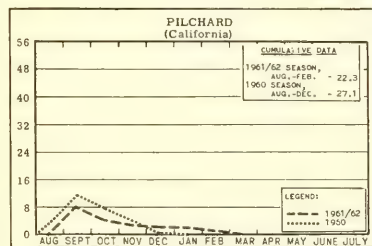
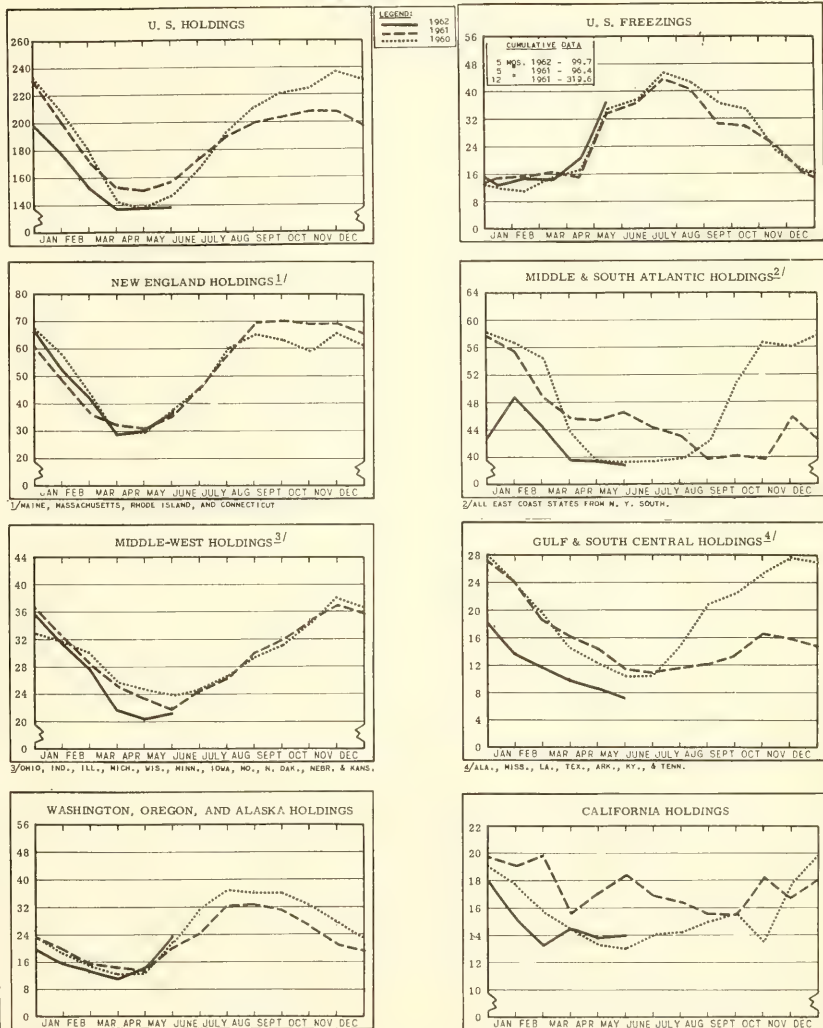


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

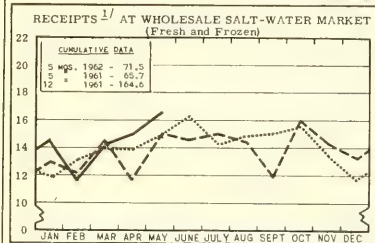
In Millions of Pounds



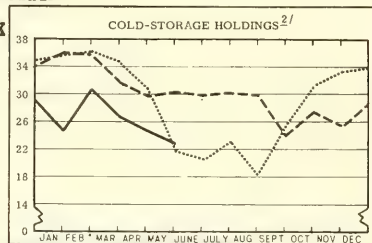
* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

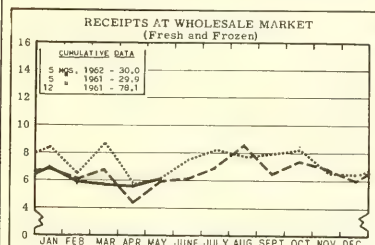


NEW YORK CITY

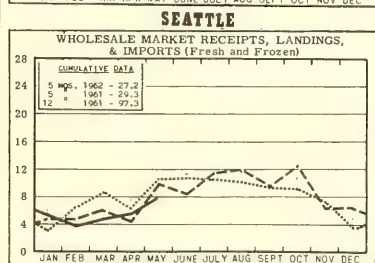
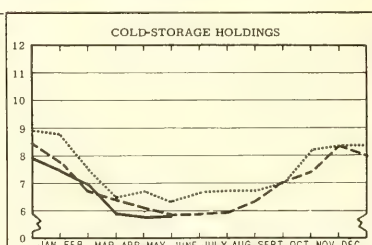


^{1/}INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

^{2/}AS REPORTED BY PLANTS IN METROPOLITAN AREA.



CHICAGO



LEGEND:
— 1962
- - - 1961
..... 1960

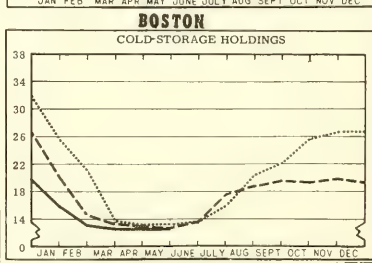


CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA

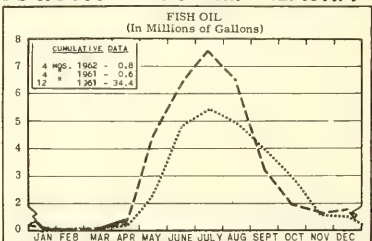
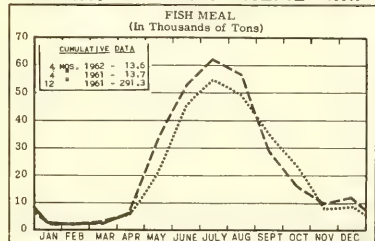
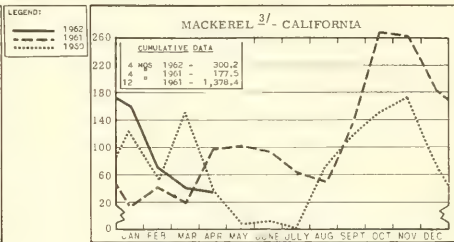
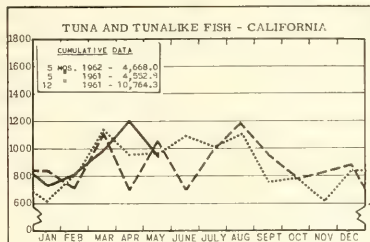
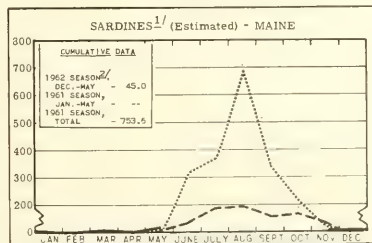
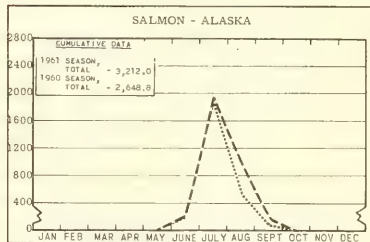
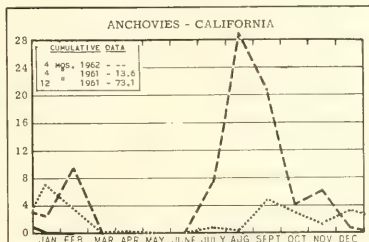


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

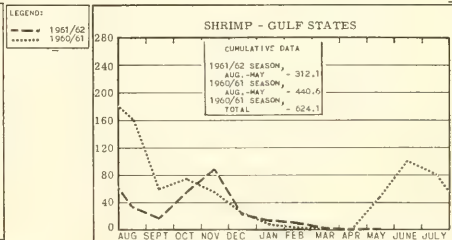
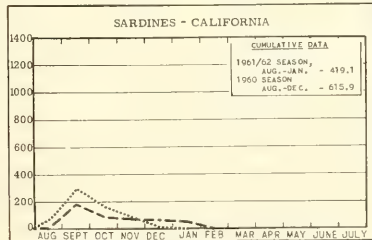
In Thousands of Standard Cases



3/ INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.



1/ INCLUDING SEA HERRING. 2/ THE 1962 SEASON STARTED DEC. 2, 1961

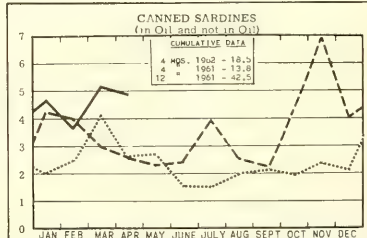
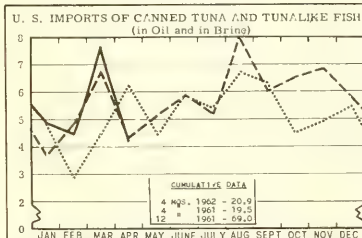
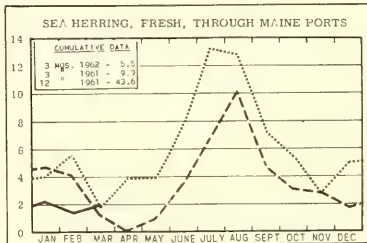
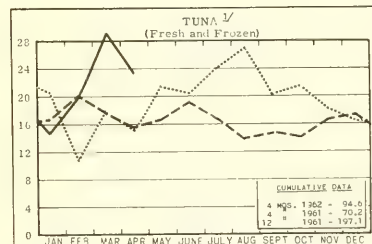
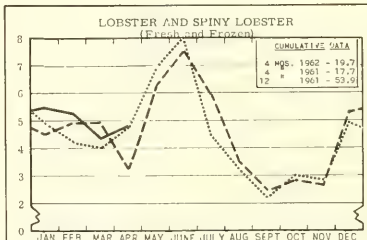
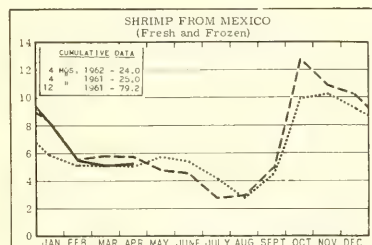
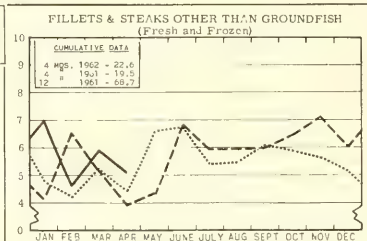
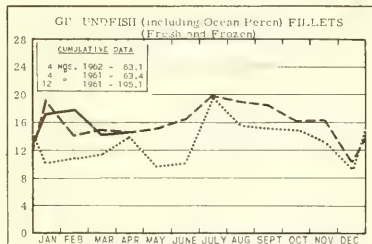


STANDARD CASES

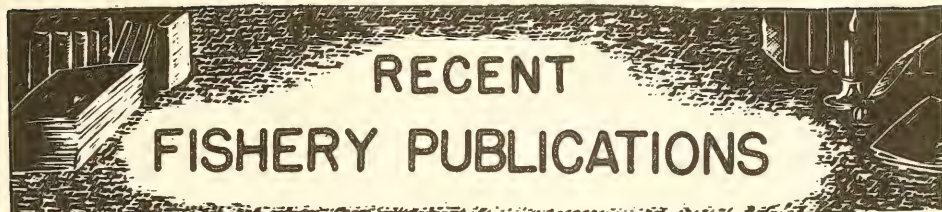
Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	1/4 drawn	3 1/2 oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# 1/2 tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	1/2-lb.	8 oz.

CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds



1/2 EXCLUDES LOINS AND DISCS.



RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE OFFICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
FL - FISHERY LEAFLETS.
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SL - BRANCH OF STATISTICS LIST OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR. - FISH. SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number	Title
CFS-2844	- Massachusetts Landings, December 1961, 5 pp.
CFS-2848	- New Jersey Landings, 1961, Annual Summary, 9 pp.
CFS-2850	- New York Landings, 1961, Annual Summary, 12 pp.
CFS-2855	- North Carolina Landings, February 1962, 4 pp.
CFS-2856	- Maine Landings, 1961, Annual Summary, by Months, 6 pp.
CFS-2857	- Maine Landings, 1961, Annual Summary, by County, Gear and Subarea, 17 pp.
CFS-2860	- Texas Landings, January 1962, 3 pp.
CFS-2862	- Canned Fishery Products, 1961, Annual Summary, 16 pp.
CFS-2864	- Maryland Landings, 1961, Annual Summary, 9 pp.
CFS-2866	- California Landings, December 1961, 4 pp.
CFS-2867	- Maine Landings, February 1962, 4 pp.
CFS-2868	- New Jersey Landings, February 1962, 3 pp.
CFS-2869	- Florida Landings, February 1962, 8 pp.
CFS-2870	- Frozen Fish Report, March 1962, 8 pp.
CFS-2871	- Virginia Landings, February 1962, 3 pp.
CFS-2872	- Maryland Landings, January 1962, 3 pp.
CFS-2873	- Rhode Island Landings, 1961, Annual Summary, 8 pp.
CFS-2874	- Louisiana Landings, January 1962, 2 pp.
CFS-2875	- Rhode Island Landings, January 1962, 3 pp.
CFS-2876	- Mississippi Landings, February 1962, 3 pp.
CFS-2879	- Michigan Landings, February 1962, 2 pp.
CFS-2880	- Wisconsin Landings, February 1962, 2 pp.
CFS-2881	- Fish Sticks and Portions, January-March 1962, 2 pp.
CFS-2882	- Alabama Landings, February 1962, 3 pp.
CFS-2883	- New York Landings, February 1962, 4 pp.
CFS-2884	- Shrimp Landings, December 1961, 6 pp.
CFS-2885	- Fish Meal and Oil, 1961, Annual Summary, 4 pp.

CFS-2886 - Florida Landings, 1961, Annual Summary, 13 pp.
CFS-2887 - Louisiana Landings, February 1962, 2 pp.
CFS-2888 - North Carolina Landings, March 1962, 4 pp.
CFS-2889 - California Landings, January 1962, 4 pp.
CFS-2891 - South Carolina Landings, March 1962, 2 pp.
CFS-2895 - Rhode Island Landings, February 1962, 3 pp.
CFS-2896 - Wisconsin Landings, March 1962, 2 pp.
CFS-2897 - Florida Landings, March 1962, 8 pp.

FL-254 (Revised) - List of Fishery Associations in the United States, 13 pp., August 1961.

FL-292 (Revised) - List of Fishery Cooperatives in the United States, 1960-1961, by Leslie D. McMullin, 18 pp., August 1961.

FL-522 - Separates from the Commercial Fisheries Review, 7 pp., September 1961.

FL-530 - Construction of a Widmark-Flask Shaker, by D. J. Bond, 2 pp., illus., December 1961.

FL-531 - Food Fishes with Fins and Scales, by Isaac Ginsburg, 7 pp., December 1961.

SL-151 (Revised) - Firms Manufacturing, 1961, Marine Animal Scrap, Meal, Oil, Solubles and Homogenized Condensed Fish.

Sep. No. 650 - Fishery Tariff Concessions in the 1960-61 GATT Negotiations.

Sep. No. 651 - Construction of a Fish Weir.

SSR-Fish. No. 376 - Methods For Lipid Analysis, an Annotated Bibliography, by Alvin L. Jensen, 78 pp., processed, June 1961.

SSR-Fish. No. 386 - Oceanographic Observations Made During a Cooperative Survey of Albacore (*Thunnus germo*) off the North American West Coast in 1959, by Joseph J. Graham and William L. Craig, 35 pp., illus., processed, August 1961.

SSR-Fish. No. 390 - Seasonal Occurrence of Marine Fishes in Four Shore Habitats Near Beaufort, N. C., 1957-60, by Marlin E. Tagatz and Donnie L. Dudley, 21 pp., illus., August 1961. A report on a 3-year seining program which was conducted to determine monthly frequency of occurrence and size range of salt and brackish water fishes in the inshore waters of the Beaufort area.

SSR-Fish. No. 396 - Oceanographic and Biological Data, Hawaiian Waters, January-October 1959, by Kenneth Sherman and Robert P. Brown, 75 pp., illus., processed, December 1961.

Exempt Trucking of Fresh and Frozen Fish and Shellfish in Interstate Commerce, by John D. Abrahamson and Carl P. Hoffman, Jr., Circular 133, 60 pp., illus., November 1961. Covers a study made because of the need for facts necessary to solve many transportation problems of vital importance to the fishing industry and to give a clearer picture of the operations of exempt and regulated carriers in relation to fishery products. An "exempt" truck is one permitted to operate legally without economic regulation by the Interstate Commerce Commission (ICC). Some trucks operate on an "exempt" basis only part of the year. Such exemption was provided in 1935 when a law placed trucking operations under the jurisdiction of the Interstate Commerce Commission. The law specified various products which were exempt from regulation by ICC. These exemptions were based fundamentally upon the perishability of the product and upon the proposition that the shipper can transport perishables to market more expeditiously by exempt carrier than by carriers required to follow definite route and time schedules. The practice of using exempt trucks has been followed for nearly three decades by individual firms dealing in fishery and other perishable products, but until this study was made by the Bureau of Commercial Fisheries, there was no over-all information on the scope of the operations. The study covered the period 1956 to 1958. A sample of 155 interstate shippers was selected from 1500 firms engaged in distributing fishery products. Another sample was taken from both the exempt and regulated carriers. The survey showed that exempt carriers employed 778 drivers in 1958 and would accept cargo for practically any destination in the country. The carriers usually made three stops to discharge cargo in the course of a trip.

Programs and Activities of the Bureau of Commercial Fisheries, Circular 135, 20 pp., illus., processed, January 1962. A description of current programs and problems of the U. S. Bureau of Commercial Fisheries and of the commercial fishing industry. Bureau programs are primarily of a fundamental and applied research nature, using fundamental research to develop new knowledge and then applying this knowledge to the practical solution of fishery research problems. In addition, the Bureau's programs involve supplying important services to the industry, consistent with services supplied by Government to other basic industries of our country. These include such things as gear development research; new product development; vessel loan programs; collection of statistics; dissemination of current, unbiased information on supplies, movement, distribution, demand, prices, and market conditions; and other important service and management activities. Thus, the program of the Bureau is developed along policies laid down by the President, with the objective of maintaining for our country a healthy, prosperous commercial fishing industry, assuring a maximum sustained harvest of the living resources of the sea.

Seaweeds Are Not Weeds, Circular 130, 6 pp., illus., 1962.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number	Title
MNL-23	- Fisheries of Chile, 28 pp.
MNL-68	- Fisheries Survey of Sierra Leone, 8 pp.
MNL-69	- Fishing Industry in Northeast Brazil: Unexploited Opportunity, 7 pp.
MNL-70	- Fisheries Survey of Liberia, 3 pp.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

Annual Report of the Biological Laboratory, Woods Hole, Mass. (for the Year Ending June 30, 1960), Circular 99, 63 pp., illus., processed, December 1960. (Bureau of Commercial Fisheries, Biological Laboratory, Woods Hole, Mass.) This report presents a summary of research activities in the Northwest Atlantic Fishery Investigations program, and a description of vessels and shore facilities. Studies relating to the management of the groundfish of the Northwest Atlantic continue to occupy an important place on the research program. Evaluating the benefit of mesh regulation on the Georges Bank haddock fishery and assessing possible benefits of uniform mesh size for the area covered by the International Commission for the Northwest Atlantic Fisheries (ICNAF) were the two most important problems in this field in 1960.

(Baltimore) Monthly Summary--Fishery Products, February, March, and April 1962, 8 pp. each. (Market News Service, U. S. Fish and Wildlife Service, 103 S. Gay St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices for fresh fishery products on the Baltimore market; for the months indicated.

California Fisheries, 1961, by V. J. Samson, 46 pp. (Available free from the Market News Service, U. S. Fish and Wildlife Service, Rm. 208, Post Office Bldg., San Pedro, Calif.) A review of 1961 trends and conditions in the California fisheries, including a historical review of California fish-meal prices, 1941-1961. Among the subjects discussed are the tuna industry and cannery receipts; domestic tuna fishery; record yellowfin tuna catch; albacore fishery; ex-vessel prices; other tuna prices; canned tuna pack; imports; and status of California purse-seine fleets in 1961. Also covered are the sardine industry and canned pack; mackerel fishery, pack, and prices; anchovy fishery; canned pet-food pack; whaling industry; and seasons in major fisheries. Included in the statistical tables are data on tuna and tunalike fish-cannery receipts, domestic landings, cannery receipts of frozen imported tuna, and canned pack, 1959-61; sardine landings, canned pack, and meal and oil produced, 1961-62 and 1960 seasons; and the canners' receipts and pack of mackerel and jack mackerel, 1959-61. It gives data on canners' receipts of raw materials and production of anchovies, herring, squid, pet food, and meal and oil; freezings and cold-storage holdings of fish and shellfish; landings in the Eureka and San Pedro-Santa Monica areas; and imports of fishery products into Arizona and California Customs Districts, 1960-61.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data,

March 1962, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; Oregon and Washington receipts (domestic and imports) of fresh and frozen tuna and tunalike fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, March 1962, 10 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Loma Station, San Diego 6, Calif.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, April 1962, 14 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

Receipts and Prices of Fresh and Frozen Fishery Products at Chicago, 1961, by G. A. Albano, 68 pp., processed, April 1962. (Available free from the Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) In the analysis of receipts of fishery products at Chicago, the author discusses the 1961 fishery products receipts and carload receipts as compared to previous years. He also discusses sources of receipts, trends in fishery products transportation, receipts by months, receipts by species and varieties, lake trout and whitefish fishery and receipts, trends in Great Lakes commercial fishery, cold-storage inventories, and imports of selected frozen fishery products. Also covers trends in the frozen shrimp market, shrimp landings, shrimp imports and exports, and the changing ecology of Lake Erie. Also included is a table giving the names, classifications, and approximate weights of certain fishery products as used in the Chicago wholesale markets. The second section presents statistical data on fresh and frozen fishery products receipts at Chicago by species and by states and provinces of origin, states and provinces by species, species by months, states and provinces by months, totals by species, and totals by states and provinces. Receipts are tabulated by method of transportation (truck, express, and freight). A table shows the monthly range of wholesale prices of some of the leading varieties of fresh and frozen fishery products handled in the Chicago market.

Gulf Fisheries (Selected Areas), 1961, by Peter DiMarco, 44 pp., processed, May 1962. (Available free from the Market News Service, U. S. Fish and Wildlife Service, 609-611, Federal Bldg., 600 South St., New Orleans 12, La.) Part I reports on trends and conditions in Gulf Coast fisheries during 1961 and gives a resume of the individual fisheries. For the shrimp fishery, a detailed account is presented of total landings by states, extent of coverage of landings, composition of shrimp landings by species and sizes, prices, canning, imports, cold-storage stocks, and

general trends and developments. Discusses production and market conditions for the oyster, blue crab, and menhaden fisheries, as well as imports of fresh and frozen fish and shellfish. Part II includes shrimp closed seasons in effect in the Gulf States during 1961, minimum shrimp size regulations, conversion factors and container capacities, and shrimp sizes. The second part also contains statistical tables showing total fishery products landings; Gulf menhaden landings and production of meal, solubles, and oil; crab meat production by areas and months; fishery imports through the New Orleans and Morgan City, La., Customs Districts and Port Isabel and Brownsville, Tex.; and LCL express shipments from New Orleans for 1961 by months and destination. Also includes tables showing monthly range of wholesale prices of fishery products on the New Orleans French Market; Gulf States weekly oyster and shrimp packs, 1960/61 season and packs by season 1956-61; summary of Gulf shrimp landings for selected areas, 1960-61 and 5-year averages; and fishery products market classifications in the Gulf area.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, March and April 1962, 8 pp. each. (Market News Service, U. S. Fish and Wildlife Service, Rm. 609, 600 South St., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas, from Mexico; and sponge sales; for the months indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, April 1962, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

New England Fisheries--Annual Summary, 1961, by John J. O'Brien, 48 pp. (Available free from the Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Reviews the fish marketing trends and conditions at the principal New England fishery ports, and highlights of fisheries in other nearby areas. Covers food-fish landings by ports and species; industrial-fish landings and ex-vessel prices; fishing vessel news; imports; frozen fishery products; and the fish-meal market. Also includes fishery landings and ex-vessel prices by months for ports of Boston, Gloucester, New Bedford, Provincetown, Woods Hole, Portland, Rockland, Point Judith, and Stonington; highlights of the Maine sardine and lobster fisheries; highlights of the fisheries of Canada, Denmark, Iceland, Norway, and Peru; and historical data of fisheries at principal New England ports. In addition, regulations governing the Massachusetts sea and bay scallop industries are outlined.

New England Fisheries--Monthly Summary, April 1962, 21 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Review of the principal New England fishery ports.

Presents data on fishery landings by ports and species; industrial-fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary--January and February 1962, 16 and 18 pp., each. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the months indicated.

New York City's Wholesale Fishery Trade, 1961 (Includes Statistics and Marketing Trends), by T. J. Risoli, 45 pp. (Available free from the Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York 38, N. Y.) The first part of this annual summary discusses fishery products receipts and marketing trends in the salt-water section of New York's wholesale Fulton Fish Market during 1961. The second part covers marketing trends and receipts in the wholesale fresh-water fish market for 1961. The third part consists of a series of statistical tables giving monthly overland and vessel receipts; receipts by species, methods of transportation, states, and provinces; imports of fishery products at New York City; and selling prices for fresh headless raw shrimp.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

1960 Lake Michigan Program of U. S. Bureau of Commercial Fisheries, 7 pp., processed, April 12, 1962. (Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, 920 N. Main St., Ann Arbor, Mich.)

Problems Related to the Establishment of a Trawl Fishery on Lake Michigan, 8 pp., processed June 30, 1960. (U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, 920 N. Main St., Ann Arbor, Mich.)

Seattle--Landings, Receipts, and Value of Fishery Products, 1961, by Charles M. Reardon, 35 pp. (Available free from the Market News Service, U. S. Fish and Wildlife Service, Pier 42, South Seattle 4, Wash.) Reviews Pacific Northwest fisheries trends and their effect upon Seattle fishery products receipts for 1961; halibut landings; carload and truckload shipments of fishery products from Seattle by months; imports of canned fishery products; receipts of Alaskan canned fishery products; and names, classifications, and approximate standards as used on Seattle wholesale market. The report also contains a number of statistical tables on receipts of fresh and frozen fish and shellfish, fresh and frozen salmon receipts and imports, halibut landings, ex-vessel landings by the otter-trawl fleet, Puget Sound canned salmon pack, and related data.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, April 1962, 9 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle 4, Wash.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl receipts reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE AVAILABLE ONLY FROM THE U. S. FISH AND WILDLIFE SERVICE, BUREAU OF COMMERCIAL FISHERIES, P. O. BOX 3832, HONOLULU, HAWAII.

The Distribution of Some Mass Species of Copepods in the Indian Ocean, by M. E. Vinogradov and N. M. Voronina, 6 pp., illus., processed, April 1962. (Translated from the Russian, *Doklady Akademii Nauk SSSR*, vol. 140, no. 1, 1961, pp. 219-222.)

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Chemical Composition of Blood of Smallmouth Bass, by Eddie Wayne Shell, Research Report 57, 41 pp., illus., printed, 30 cents, 1961.

Estimating Red Salmon Escapements by Sample Counts from Observations Towers, by Clarence Dale Becker, Fishery Bulletin 192 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 61, pp. 355-369), 19 pp., illus., printed, 20 cents, 1962.

Fluctuations in Age Composition and Growth Rate of Cutthroat Trout in Yellowstone Lake, by Ross V. Bulkley, Research Report 54, 35 pp., illus., printed, 30 cents, 1961.

Limnology of Yellowstone Lake in Relation to the Cutthroat Trout, by Norman G. Benson, Research Report 56, 38 pp., illus., printed, 40 cents, 1961.

Mortality Studies on Cutthroat Trout in Yellowstone Lake, by Orville P. Ball and Oliver B. Cope, Research Report 55, 66 pp., illus., printed, 45 cents, 1961.

National Survey of Fishing and Hunting, 1960, Circular 120, 77 pp., illus., printed, 50 cents, September 1961.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

AGAR-AGAR:

Photos Showing Growth of Gelidium Cultured Artificially, by Kakujiro Ohno, 12 pp., illus., processed in

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Japanese and English. Tokai Suisan Kagaku Kenhyusho, 1, 125, 2-chome, Ikebukuro, Toshima-ku, Tokyo, Japan.

"Rheological Properties of Hydrogels of Agar-Agar," by Kiyoshi Arakawa, article, *Bulletin of the Chemical Society of Japan*, vol. 34, September 1961, pp. 1233-1235, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-kaigandori, Minato-ku, Tokyo, Japan.

Statement on Artificial Cultivation and Production of Agar-Agar, by Kakujiro Ohno, 30 pp., illus., processed in Japanese. Tokai Suisan Kagaku Kenhyusho, 1, 125, 2-chome, Ikebukuro, Toshima-ku, Tokyo, Japan.

"Studies on the Antisepsis for Agar During the Manufacturing Process in the Mild Winter. VI--Influences of Antiseptics on the Qualities of 'Tokoroten' and Agar," by Hiroaki Fujisawa and Terutake Sukagawa, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 27, April 1961, pp. 318-322, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-kaigandori, Minato-ku, Tokyo, Japan.

ALGAE:

The Algae, by V. J. Chapman, 472 pp., illus., printed, \$8, The Macmillan Company, 60 Fifth Ave., New York 11, N. Y.

Una Clave Ilustrada de los Generos de Algas Benticas del Pacifico de la America Central (Illustrated Key to the Genera of Pacific Central American Benthic Algae), by E. Yale Dawson, article, *Pacific Naturalist*, vol. 3, no. 4, April 16, 1962, pp. 167-231, illus., printed in Spanish and English. Library, Beaudette Foundation for Biological Research, 1597 Calzada Rd., Santa Ynez, Calif.

AMINO ACID:

"The Amino Acid Composition of Cod Tropomyosin," by P. L. Hoogland and others, article, *Journal of the Fisheries Research Board of Canada*, vol. 18, July 1961, pp. 501-512, printed. Queen's Printer & Controller of Stationery, Ottawa, Canada.

ANCHOVIES:

"Ansjojven pa Vastkusten" (Anchovy Fishing on the West Coast), by Armin Lindquist, article, *Svenska Vastkustfiskarsen*, vol. 32, no. 7, April 10, 1962, p. 148, illus., printed. Svenska Vastkustfiskarnas Central-forbund, Goteborg, Sweden.

AQUATIC PLANTS:

Eurasian Water Milfoil in the Chesapeake Bay and the Potomac River, by Dexter Haven, Contribution No. 108, 5 pp., illus., printed, 1961. Virginia Institute of Marine Science, Gloucester Point, Va.

BACTERIOLOGY:

Type E Botulism Poisoning, Poland, by Henryk Meisel, JPRS 9425, 14 pp., printed. Joint Publications Research Service, Washington 25, D. C., June 19, 1961. (For sale by Office of Technical Services, Department of Commerce, Washington 25, D. C., price upon application.)

BIOCHEMISTRY:

"The Nature of the Components Liberated by Treatment of Cod Myosin with Alkali or with Low Concentrations of Urea," by J. J. Connell and H. S. Olcott, article, *Archives of Biochemistry and Biophysics*, vol. 94, July 1961, pp. 128-135, printed. Academic Press, Inc., 111 5th Ave., New York 3, N. Y.

"The Solubility of Actomyosin as a Biochemical Characteristic of the Processes Occurring in the Muscles of Fishes During Cold Treatment," by N. A. Golovkin and L. I. Pershina, *Chemical Abstracts*, vol. 55, October 2, 1961, 20256c, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

BRAZIL:

Alguns Peixes Pouco Conhecidos Ocorrendo na Costa Brasileira (Some Little Known Fish Occurring on the Brazilian Coast), by Paulo de Miranda Ribeiro, *Zoologia* No. 224, 11 pp., illus., printed in Portuguese. (Reprinted from *Boletim do Museu Nacional*, May 3, 1961.) Museu Nacional, Quinta da Boa Vista, Rio de Janeiro, Brazil.

Pescas do TOKO MARU (Fish Caught by the Toko Maru), by Paulo de Miranda Ribeiro, *Zoologia* No. 228, 18 pp., printed in Portuguese. (Reprinted from *Boletim do Museu Nacional*, August 10, 1961.) Museu Nacional, Quinta da Boa Vista, Rio de Janeiro, Brazil.

CALIFORNIA:

California Fish and Game, vol. 48, no. 2, April 1962, 62 pp., illus., printed, single copy 75 cents. Department of Fish and Game, 987 Jedsmith Dr., Sacramento 19, Calif. (For sale by the Printing Division, Documents Section, Sacramento 14, Calif.) Includes, among others, articles on "Effects of Sardine Spawning Stock Size and Environment on Year-Class Production," by John Radovich; and "Introduction of Pond Smelt from Japan into California," by Joseph H. Wales.

CANADA:

Fisheries Statistics of Canada, 1960 (Saskatchewan), 9 pp., printed in French and English, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, April 1962. Contains statistical tables on Canadian fisheries located on the lakes of Saskatchewan. Includes value of fishery products by species, 1953-1960; quantity and value of landings by species; 1959-1960; quantity and value by major species and by lakes, 1959 and 1960; capital equipment in primary fisheries operations, 1959-1960; and number of persons engaged in the primary fisheries operations, 1959-1960.

Inland Fisheries, 1945-1960, Reference Paper No. 2, illus., printed in English and French, 74 pp. Department of Industry and Commerce, Quebec Bureau of Statistics, Quebec, Canada. Includes statistics on fresh-water fish caught by commercial fishermen, quantities and values by species of fish, and the annual census of fishing boats, fishing gear, wharves and shelters.

"List of the Marine Fishes of Canada," by D. E. McAllister, article, *National Museum of Canada Bulletin*, no. 168, pp. 1-76, printed. National Museum of Canada, Ottawa, Canada.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Pecheries Maritimes, Annee 1961 (Preliminary Report on Maritime Fisheries, 1961), 42 pp., processed in French and English. Department of Industry and Commerce, Quebec Bureau of Statistics, Quebec, Canada, April 6, 1962. Summarizes the twelve monthly reports and gives the size of the catch and its value to the fishermen, as well as a summary of production. Some comparisons are also made with the two previous seasons.

Pecheries Maritimes, 1958-1960 (Maritime Fisheries, 1958-1960), 96 pp., illus., printed in French and English. Department of Industry and Commerce, Quebec Bureau of Statistics, Quebec, Canada, 1962. Contains statistics of maritime fisheries of the Province of Quebec for the years 1958-1960. Includes graphs and tables on fishermen, capital equipment, catches, and landed and marketed values.

31st Annual Report, 1960, Department of Fisheries, Cat. No. Fs 1-1960, 138 pp., illus., printed, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, 1961. Presents the functions and activities of the Department of Fisheries for the year 1960, and the financial statements of the Department for the fiscal year 1960/61. Covers in detail the activities of the Department's Conservation and Development Service, Inspection and Consumer Service, Economics Service, Information and Educational Service, and Industrial Development Service. Also covers the Fishermen's Indemnity Plan, and activities of the Fisheries Prices Support Board, Fisheries Research Board of Canada, International Commissions, and special committees. Canada's Pacific Coast, Lake, and Atlantic Coast fisheries are also discussed. Statistics cover the quantity and value of fish and shellfish landed, exports by type of products, number of fishermen in Canada, and value of fishing craft and gear. The 56-page appendix contains financial statements for fiscal year 1960/61, and statements on fish culture development.

CATFISH:

"Potential Industry: Commercial Catfish Production," by G. E. Mason, article, Mississippi Game and Fish, vol. 24, no. 10, March-April 1962, pp. 9, 12, illus., printed. Mississippi Game and Fish Commission, Jackson, Miss. Describes commercial catfish production as a new farm business which is at present in an experimental stage in the State of Mississippi.

CEYLON:

Administration Report of the Director of Fisheries for 1960, Part IV--Education, Science and Art (L), 71 pp., illus., printed in Ceylonese and English, 2/35 (about 50 U. S. cents). Government Publications Bureau, Colombo, Ceylon. Report on the activities and accomplishments of the Ceylon Department of Fisheries for the year 1960. Includes, among other data, information on programs of the organization; disputes and regulations; benefits for fishermen; fishery loans, coastal and navigation aids; fishing harbors; and air-sea rescue services. It covers fresh and brackish-water fisheries; pearl fisheries; fish factory at Mutwal; cooperative fish sales union; and fishery research. Also contains statistical tables on imports and exports of fish and fishery products; and production of fresh and cured fish for 1960.

CHILE:

"Explotacion Pesquera y Aprovechamiento de los Productos de la Pesca en Chile" (Fishery Exploitation and Utilization of Fishery Products in Chile), Primer Congreso Chileno de Ingenieria Quimica, vol. 3, 307 pp., illus., printed in Spanish. Instituto de Ingenieros Quimicos de Chile, Universidad de Concepcion, Concepcion, Chile, August 1959.

Import Tariff System of Chile, WTIS Part 2, Operations Report No. 62-10, 2 pp., printed, single copy 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., February 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Presents information on units of currency, weights, and measures; basis of custom duties; custom surcharges; method of payment of duties; preferential rates; sales and similar internal taxes; consular fees; and free ports.

COD:

"The Oogenesis and Reproduction Cycle of the Cod," by V. P. Sorokin, article, Soviet Fisheries Investigations in Northern Seas, vol. 10, pp. 125-144, printed in Russian. (Translation available on loan only to approved borrowers from Keeser, Science Museum Library, London, S.W. 7, England.) Soviet Fisheries Investigations in Northern Seas, Moscow, U.S.S.R.

"La production de l'industrie Canadienne de la peche a la morue a diminue en 1961" (Production of the Canadian Cod Fishery Declined in 1961), by J. E. Turner, article, La Pêche Maritime, vol. 41, no. 1009, April 1962, pp. 217-219, illus., printed in French. La Pêche Maritime, 190 Boulevard Haussman, Paris, France.

COMMUNIST CHINA:

Fishery Production and Policy in Communist China, by Asakawa Kenji, JPRS 12253, 57 pp., printed, Joint Publications Research Service, Washington, D. C. (Photocopies for sale by Photoduplication Service, Library of Congress, Washington 25, D. C.--price upon application.)

COMPOSITION:

"Estradiol-17B in the Eggs of the American Lobster, Homarus americanus," by Robert D. Lisk, article, Canadian Journal of Biochemistry and Physiology, vol. 39, April 1961, pp. 659-662, printed. Division of Administration, The National Research Council, Sussex St., Ottawa, Canada.

"Estrogens and Progesterone in the Sea Urchin (Strongylocentrotus franciscanus) and Pecten (Pecten hercynicus)," by Charles R. Botticelli, Frederick L. Hissaw, Jr., and Herbert H. Wotiz, article, Proceedings of the Society for Experimental Biology and Medicine, vol. 106, April 1961, pp. 887-889, printed. Society for Experimental Biology and Medicine, 139 St. & Convent Ave., New York 31, N. Y.

"Fish Meat Protease," by Tadao Hata, Toshio Asao, and Etushiro Doi, Chemical Abstracts, vol. 55, June 12, 1961, 11696b, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

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"Guanidino Compounds from a Sea-Anemone, *Anthopleura japonica*," by Satoru Makisuma, article, *Journal of Biochemistry*, vol. 49, April 1961, pp. 284-291, printed. The Japanese Biochemical Society, c/o Dept. of Biochemistry, Faculty of Medicine, Tokyo University, Bunkyo-ku, Tokyo, Japan.

" γ -Hydroxyarginine, a New Guanidino Compound from a Sea Cucumber, III—Actions of Arginase and Arginine Decarboxylase," by Yoshimasa Fujita, article, *Journal of Biochemistry*, vol. 49, June 1961, pp. 468-471, printed. The Japanese Biochemical Society, Dept. of Biochemistry, Faculty of Medicine, Tokyo University, Bunkyo-ku, Tokyo, Japan.

CONNECTICUT:

A History of the Connecticut River and its Fisheries, by Douglas D. Moss, 15 pp., illus., printed. Connecticut Board of Fisheries and Game, Hartford, Conn., 1960.

COOKERY:

Israeli Cookery, by Lilian Cornfield, 375 pp., illus., printed, \$4.95 for U. S., \$5.70 for foreign mailing. The Avi Publishing Co., Inc., P. O. Box 388, Westport, Conn., 1962. Many cookbooks have been published, but now and then one comes along that is unique. This is a unique book of recipes that are really different. Fish and fish products need to be cooked and served in a variety of ways in order to hold the interest of the diner. This book will help all those looking for new, plain or exotic, and different recipes for all types of foods, including fish. There are recipes for appetizers, soup, meats, poultry, fish, desserts, fruits, and sauces. But because of my interest, those for fish attracted my interest particularly. Whether you are a processor, wholesaler, hotel and restaurant supplier, food editor, nutritionist, chef, hotel or restaurant operator, or a housewife, the recipes in this book will give you something different. Although characteristically Israeli, it should appeal to anyone who is interested in serving foods, and especially fish, in new and appetizing ways. Each chapter covers one of the many divergent communities existing from time immemorial which go to make up modern Israel. Their food culture; folk lore; method of preparation of typical dishes, description of menus, and spices and ingredients used are included. There are many photographs of the different communities, native dress, and illustrations of the dishes against an Israeli background which help to visualize what a dish looks like. The variety of the recipes can be more readily imagined when one realizes that included among the different communities are Arabs, Iraqis, Caucasians and Yemenites, Afghanistans, Sephardi Jews of the Balkans, North Africa, and Jerusalem, as well as Ashkenazis living in the country. Also, other groups from western, central, and eastern Europe, Persians, Cochinese, etc. There is one or more fish recipes in almost each section of the book. As a whole, fish recipes are well represented. In the Chapter "Foods of the Near and Far East" some are simple recipes like grilled fish (Masagoof) and fish for the Sabbath, yet mouth-watering in their simplicity. Then there is the more exotic recipe, fish Musaka, with eggplant, under the chapter on "North Africa." To name a few, there are recipes for flaked fish pie, pickled fried fish, fish baked with cream or olives,

fish balls in celery, fish and broad beans, Chinese fish, fish and cucumber salad; boiled, grilled, or baked carp; kedgeree fish. A chapter on chef's recipes of leading Israeli hotels and restaurants includes such fish recipes as filled fish as served at the Sharon Hotel on the Mediterranean shore just north of Tel Aviv, Mediterranean fish at the King David Hotel of Jerusalem, fish boats at the Holyland Hotel outside Jerusalem, filet de sole bonne femme from the Zion Hotel in Haifa, and Red Sea fish sausage from the Ron Restaurant in Tel Aviv. Rather unusual is a section under Israeli fish dishes which gives several recipes using fresh tuna, including tuna fish chowder, tuna fish to taste like canned tuna, steamed tuna steaks in butter, grilled tuna steaks, goulash of tuna fish, and several recipes using canned tuna. Besides a special holiday section, there is a spice table and how spices are used in Israeli, a glossary of culinary terms in Hebrew and English, an introduction which is a short history of the different ethnic groups and their integration in Israel, and a good index. For recipes that are different, this is the book. The author is well qualified to write such a book. She is a Canadian school teacher who has been working in Israel as a nutritionist and home economist for nearly 40 years except for three years when she studied nutrition in Columbia University Teachers College. The recipes have all been personally tested by the author.

--Joseph Pileggi

CRABS:

"Crab Trap Escape-Opening Studies," by Tom Jow, article, *Pacific Marine Fisheries Commission Bulletin*, 5, pp. 49-71, illus., printed. Pacific Marine Fisheries Commission, 741 State Office Bldg., 1400 S. W. Fifth Ave., Portland 1, Oreg., 1961.

EAST AFRICA:

East African Fishes of the *EPNIPHELUS* TAUVINA Complex, with a Description of a New Species, by John F. C. Morgans, 17 pp., illus., processed. East African Marine Fisheries Research Organization, Zanzibar, East Africa. Describes several species of grouper.

A Preliminary Survey of Bottom Fishing on the North Kenya Banks, by John F. C. Morgans, 84 pp., illus., processed. East African Marine Fisheries Research Organization, Zanzibar, East Africa.

Serranid Fishes of Tropical East Africa, Part I - Keys to the Subfamilies, Genera, and Species with Descriptions of Certain Species and Notes on Their Biology, by John F. C. Morgans, 54 pp., processed. East African Marine Fisheries Research Organization, Zanzibar, East Africa. Discusses the many species of rock cod in the region.

A Synopsis of Existing Knowledge on the Fishes of the Genus *Auxis* cuvier, 1829 in the Indian Ocean, by F. Williams, 14 pp., processed. East African Marine Fisheries Research Organization, Zanzibar, East Africa. Common name of *Auxis cuvier* is frigate mackerel or boo hoo.

Triggering Depth Gauge, by B. E. Bell, 11 pp., illus., manuscript. East African Marine Fisheries Research Organization, Zanzibar, East Africa, March 9, 1961.

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EXPORTS:

United States Exports of Domestic and Foreign Merchandise (Commodity by Country of Destination), 1961 Annual, Report No. FT 410, processed, Part I, 202 pp., \$1.25; and Part II, 354 pp., \$2. Bureau of the Census, U. S. Department of Commerce, Washington, D. C., April 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) The statistics in Part I cover United States exports of domestic and foreign merchandise (including fishery products and by-products) under group 00 through group 5. Part II covers merchandise under groups 6 through 9 (some items of interest to the fishery and allied industries are included). Data are shown by commodity and country of destination.

FEDERAL REGULATIONS:

Cumulative Pocket Supplement to Code of Federal Regulations, Title 50, Wildlife and Fisheries as of January 1, 1962, GS 4.108: 50/supp. 961, 77 pp., printed, 40 cents. Federal Register Office, General Services Administration, Washington, D. C., 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

FISH MANAGEMENT:

"Inshore Fisheries Management," by C. O'D. Iselin, article, *Oceanus*, vol. 8, no. 3, March 1962, pp. 2-6, illus., printed. The Woods Hole Oceanographic Institution, Woods Hole, Mass. A well-known oceanographer presents his views on the need for an intense program of marine management in order to develop the vast fishery resources of the inshore waters. He feels that such management in the form of state aquacultural experimental stations can do for the sea what state agricultural stations have done for farming the land.

Populationsanalys vid Studium av Reglerade Sjoar (Population Analysis with Studies on Lake Management), by T. Lindstrom, 16 pp., processed in Swedish with English bibliography. (Reprinted from *Vandrarfiskutredningen Meddelande, Report No. 5.*) Särtryck ur Ostkusten, Hudiksvall, Sweden, 1960.

FISH MEAL:

Protein Requirements of Broilers as Influenced by Fish Products, by T. D. Rannels and D. G. Snyder, *FAO International Conference on Fish in Nutrition Paper No. C/IV. 1, 3 pp., printed.* Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

FISH MUSCLE:

"Extractable Nitrogenous Compounds of Fish Muscle," by P. L. Vul'fson, article, *Biochemistry (U.S.S.R.)*, vol. 26, September-October 1961, pp. 271-274, printed. Consultants Bureau, Inc., 227 W. 17th St., New York 11, N. Y.

FISH OILS:

Nutritional Effect of Oxidized and Thermally Polymerized Fish Oils, by Noboru Matsuo, 32 pp., printed. (Reprint from unidentified source.) Department of Chemistry, Seikei University, Tokyo, Japan, September 1961.

FISH POPULATIONS:

Annotated Collection of Works Published in 1956 on the Problem of Enumeration of Population Dynamics, Behavior and Distribution of Fishes, Marine Mammals, Commercial Invertebrates, and Algae and Their Relationship with Conditions of Their Existence, by N. S. Romanov, 168 pp., printed. Academy of Science, Section of Biological Science, Ichthyological Commission, Moscow, U.S.S.R., 1959.

The Application of Comparative Population Studies to Fisheries Biology--An Exploration, by S. J. Holt, 21 pp., illus., printed. (Reprinted from *The Exploitation of Natural Animal Populations*, pp. 51-71.) Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

"Elementary Populations of Fishes," by N. V. Lebedev, article, *Zoologicheskii Zhurnal*, vol. 25, no. 2, 1946, pp. 136-164, printed in Russian. (Translation available on loan only to approved borrowers from Keeper, Science Museum Library, London, S.W. 7, England.) *Redaktsiia Zoologicheskogo Zhurnala, Podsozskii per. d. 21, Moscow, B-64, U.S.S.R.*

Factors of Population Dynamics of the Commercial Fauna in the Northwest Pacific Ocean, by P. A. Moiseev, *OTS 60-51152, 10 pp., printed, 50 cents.* (Translated from the Russian, *Zoologicheskii Zhurnal*, vol. 35, no. 11, 1956, pp. 1601-1607.) Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., 1962.

Mathematical Analysis of the Population Dynamics of Fish, by V. S. Ivlev, *OTS 60-51145, 10 pp., illus., printed, 50 cents.* (Translated from the Russian, *Vestnik Leningradskogo Universiteta*, vol. 2, no. 9, 1959, pp. 119-127.) Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., 1961.

FISHY ODORS:

"Speculations on Fish Odors and Flavors," by M. E. Stansby, article, *Food Technology*, vol. 16, no. 4, April 1962, pp. 28-32, illus., printed, \$1.50. The Garrard Press, 510 North Hickory, Champaign, Ill. The author explains that there are many types of fishy odors and flavors that occur in fish that are described as being "fishy." However, these odors may range from those characteristic of individual species of fish through altered odors resulting from such changes as oxidative deterioration of fish oils and release of specific compounds during bacterial or enzymatic degradation. The mechanisms of reactions and the nature of the chemical compounds responsible for fishy odors are still very imperfectly understood, and much more research is needed to clarify the nature and causes of these various fishy odors. The topics discussed in this article are: definition of fishy odor; causes of fishy odor; nitrogen-oil reactions; and experiments made to determine whether more research is warranted on the relationship of reactions between nitrogen and oil and development of fishy odors and flavors.

FOOD AND AGRICULTURE ORGANIZATION:

The Food and Agriculture Organization has published reports describing that Agency's activities under the

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Expanded Technical Assistance Program for developing the fisheries of many countries. These reports have not been published on a sales basis, but have been processed only for limited distribution to governments, libraries, and universities. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

Second Report to the Government of India on Fishing Boats, by Peter Gurtner, FAO Report No. 1096, 59 pp., illus., processed, 1959.

FOREIGN TRADE:

Licensing and Exchange Controls--Gabon, Chad, Congo, and Central African Republic, WTIS Part 2, Operations Report No. 62-13, 4 pp., printed, 10 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., March 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

FRANCE:

"Construit aux Chantiers de la Perriere, le Paris-Bretagne premier chalutier francais a peche par l'arriere (The First French Stern Trawler, the "Paris-Bretagne," was constructed in the Shipyards of Chantiers de la Perriere), article, *La Pêche Maritime*, vol. 41, no. 1009, April 1962, pp. 212-214, illus., printed in French. La Pêche Maritime, 190 Boulevard Haussman, Paris, France.

"Le developpement de la peche par l'arriere dependra beaucoup de la possibilite de trouver denouveaux fonds de peche" (The Development of Stern Trawler Fishing Will Depend Mostly Upon the Possibility of Finding New Fishing Grounds), by G. Lienesch, article, *La Pêche Maritime*, vol. 41, no. 1009, April 1962, pp. 226-230, illus., printed in French. La Pêche Maritime, 190 Boulevard Haussman, Paris, France.

Rapport sur la Production de l'Industrie des Peches Maritimes en 1961 (Report on the Production of the Fishing Industry in 1961), 66 pp., illus., processed in French. Comité Central des Peches Maritimes, Direction des Peches Maritimes, Secretariat de la Marine Marchande, Paris, France.

FREEZE-DRYING:

"Freeze-Drying Being Widely Demonstrated to Food Factories," article, *Modern Refrigeration*, vol. 64, September 1961, pp. 919-920, printed. Refrigeration Press Ltd., Maclaren House, 131 Great Suffolk St., London, SE 1, England

"Present Status of Freeze-Drying Surveyed," article, *National Provisioner*, vol. 145, October 14, 1961, pp. 12-14, 16, printed. National Provisioner Inc., 15 W. Huron St., Chicago 10, Ill.

FREEZING:

How to Freeze Fish, by Nita Orr, Misc. Pamphlet 208, 4 pp., printed. North Carolina Agricultural Extension Service, State College Station, Raleigh, N. C., July 1961. Offers helpful hints on freezing fish in order to keep that "captured freshness," including care of fresh caught fish, and how to successfully package, freeze, and store fish. A few informative questions and answers are also included.

"Influence of Different Lethal Conditions upon Fish Muscle Protein. II--Denaturation of Carp Myosins by Freezing and Frozen Storage," by Masao Migita and Shigeo Otake, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 27, April 1961, pp. 327-338, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-kaigandori, Minato-ku, Tokyo, Japan.

FRESH-WATER FISH:

Studies on the Freshwater Fishes of Japan, by Yaichiro Okada, 1,065 pp., illus., printed, \$15. Prefectural University of Mie, Tsu, Mie Prefecture, Japan, 1961. (For sale by Japan Publications Trading Co., Ltd., Central P. O. Box 722, Tokyo, Japan.)

FROZEN FISH:

Peixe Congelado--Fabrico-Armazenagem-Distribuicao (Frozen Fish--Processing, Storage, Distribution), by Luis Torres, Notas Mimeografadas do Centro de Biologia Piscatoria No. 22, 27 pp., illus., processed in Portuguese with French summary. Centro de Biologia Piscatoria, Lisbon, Portugal, 1961. A bibliographical review concerning the processing of frozen fish, its freezing chain, and resulting biochemical changes in the product.

FROZEN FISHERY PRODUCTS:

"Survival of Bacteria of Public Health Significance in Frozen Sea Foods," by H. Raj and J. Liston, article, *Food Technology*, vol. 15, October 1961, pp. 429-434, printed. Institute of Food Technologists, The Garrard Press, 510 N. Hickory, Champaign, Ill.

FROZEN STORAGE:

"Visual Indicator Measures Maximum Temperature of Frozen Food Loads," article, *Food Engineering*, vol. 33, October 1961, p. 91, printed. Chilton Company, Chestnut & 56th Sts., Philadelphia 39, Pa.

GEAR:

On the Behaviour of Fishes in Relation to Fishing Gear, by H. Mohr, 30 pp., processed. (Translated from the German, *Protokolle zur Fischereitechnik*, vol. 29, no. 6, 1960, pp. 296-326.) Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory, Lowestoft, Suffolk, England.

A Hydraulic Escalator Shellfish Harvester, J. S. MacPhail, Bulletin No. 128, 28 pp., illus., printed, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, 1961.

GERMANY:

"Nahrungsuntersuchungen an Einigen Fischen im Elbe-Mündungsgebiet" (Investigations of the Food of Some Fishes in the Estuary of the Elbe), by Heinrich Kuhl, article, *Berichte der Deutschen Wissenschaftlichen Kommission für Meeresforschung*, vol. 16, no. 2, July 1961, pp. 90-104, illus., printed in German with English summary. E. Schweizerbart'sche Verlagsbuchhandlung (Nägele u. Obermiller), Stuttgart W., Germany.

"Über die Biologie und Fischereiliche Bedeutung der Lengfische (Molva molva L., Molva byrkjelange Walb.) und des Lumb (Brosimius brosme Asc.)" (On the Biology and Economic Importance of the Ling, Blue Ling, and Torsk), by Gatot Rahardjo Joenoes, article, *Berichte der Deutschen Wissenschaftlichen Kommission*

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fur Meeresforschung, News Series, vol. 16, no. 2, July 1961, pp. 129-160, illus., printed in German with English summary. E. Schweizerbart'sche Verlagsbuchhandlung (Nägele u. Obermiller), Stuttgart W., Germany.

HALIBUT:

"Proximate Composition of Canadian Atlantic Fish. I--Variation in Composition of Different Sections of the Flesh of Atlantic Halibut (*Hippoglossus hippoglossus*)," by A. Mannan, D. I. Fraser, and W. J. Dyer, article, *Journal of the Fisheries Research Board of Canada*, vol. 18, July 1961, pp. 483-493, printed. Queen's Printer & Controller of Stationery, Ottawa, Canada.

HERRING:

"The First Voyage of the Pinro Herring Research Reconnaissance Expedition to the Northwest Atlantic in the Summer of 1960," by I. G. Yudanov, article, *Okeanologiya*, no. 4, 1961, pp. 756-757, printed in Russian. (Translation available on loan only to approved borrowers from Keeper, Science Museum Library, London, SW 7, England.) Akademii Nauk SSSR, Moscow, U.S.S.R.

"Observations on Herring During a Voyage of R. Sub Severnaya," by D. V. Radakov, M. 4715, article, *Biulletin Okeanograficheskoi Komissii, An SSSR*, no. 6, 1960, pp. 39-40, printed in Russian. (Translation available on loan only to approved borrowers from Keeper, Science Museum Library, London, SW7, England.) Akademii Nauk SSSR, Moscow, U.S.S.R.

ICHTHYOLOGY:

Copeia, no. 1, 253 pp., illus., printed, \$2.50. American Society of Ichthyologists and Herpetologists, 1811 Nordhoff St., Northridge, Calif., April 11, 1962. Includes, among others, articles on "The Redfin Pickerel, *Esox americanus* in North Carolina," by E. J. Crossman, "Some Phases in the Life History of the Alaskan Blackfish, *Dallia pectoralis*," by Roger F. Blackett, and "Marlin and Swordfish in Oceanic Waters of the Western North Atlantic," by James L. Squire, Jr.

INTERNATIONAL COMMISSIONS:

International Commission for the Northwest Atlantic Fisheries, Annual Proceedings for the Year 1960-61, vol. 11, 1961, 113 pp., illus., printed. International Commission for the Northwest Atlantic Fisheries, Halifax, N.S., Canada. Presents the Commission's administrative report for the year ending June 30, 1961, including financial statements; a report of the Eleventh Annual Meeting held June 5-10, 1961; summaries of research during 1960, by countries; a compilation of research reports by subareas for 1960; and lists of scientists and laboratories engaged in the Commission's work. Also contains the following selected research paper from the 1960 Annual Meeting: "Continuous Plankton Records--The Distribution of Young *Sebastes marinus* (L.)," by G. T. D. Henderson.

"North Pacific Fur Seal Commission," article, *Trade News*, vol. 14, no. 8, February 1962, pp. 3-6, illus., printed. Department of Fisheries of Canada, Ottawa, Canada. A brief report on the Fifth Annual Meeting of the North Pacific Fur Seal Commission held in Ottawa, Canada, February 7-9, 1962. The

Commission was established in 1957 for the purpose of developing and maintaining the stocks of fur seals of the North Pacific to levels designed to produce the highest sustainable yield. It is composed of representatives from the member countries of Canada, Japan, the U.S.S.R., and the United States.

Report by the President on the Ninth Meeting of the Permanent Commission Held in Copenhagen, May 1961, 31 pp., processed in English and French. Office of the Commission, International Fisheries Convention of 1946, Board of Trade Bldgs., Whitehall Gardens, London SW1, England, 1961. Includes report by the President on the Ninth Meeting of the Permanent Commission; list of names and descriptions of delegates, advisers, and observers attending the meeting; agenda; report by the Finance Committee in regard to the financial year ending July 30, 1960, and estimate of payments and receipts for the year ending June 30, 1961; provisional budget for the year ending June 30, 1962; and a press notice issued after the Ninth Meeting.

INVESTMENT OPPORTUNITIES:

"Variety of Lending Agencies Assist Overseas Business," by William F. Doering and Robert D. Sethian; "U. S. Guides and Guards Private Investor Abroad," by Eugene M. Braderman; "Investment Office Acts as Capital 'Matchmaker'," by Robert L. Oshins; and "Foreign Credit Insurance Available Through FCIA," by Henry G. Sheehy, articles, *Foreign Commerce*, vol. 67, no. 20, May 14, 1962, pp. 884-890, illus., printed, 30 cents. U. S. Department of Commerce, Washington 25, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A series of articles on investment opportunities abroad. Provide a simplified introduction to the United States and international lending agencies, whose basic policies and programs are outlined in table form. Also point out the complications of investing abroad and describe how to obtain current information on business conditions and activities of Governments affecting business anywhere in the world. Information on a new office within the Department of Commerce designed to coordinate businessmen interested in overseas investment and appropriate projects in developing areas is also available. The problem of exporters insurance for the payment of products and the final formulation of such a program are also discussed.

ISRAEL:

Bamidgeh (Bulletin of Fish Culture in Israel), vol. 13, no. 3/4, December 1961, 44 pp., illus., printed in Hebrew and English. Department of Fisheries and Fish Breeders' Association, Nir-David, D. N., Hakiryia, Israel. Includes the following articles: "Monosex Culture of Carp," by S. Kessler and others; "Fisheries and Fish Culture in Israel in 1960," by S. Sarig; "Study of the Growth of *Tilapia galilaea* (AR-TED) in Various Saline Concentrations," by J. Chervinski; and "Transporting Live Carp in Polyethylene Bags," by G. Wohlfarth and others.

Fishermen's Bulletin, vol. 4, no. 1 (31), March 1962, 32 pp., illus., printed in Hebrew with some English abstracts. Sea Fisheries Research Station, P. O. Box 699, Haifa, Israel. This bulletin contains, among others, the following articles: "Plankton Research

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

and Its Relationship to the Herring Fishery in the North Sea," by B. Kimor (Komarovskiy); "Plinius on Fish," by M. Sas; "Fisheries in the Atlantic with Las Palmas as a Base," by M. Kramer; "Fishing Vessel Hiram 1," by M. Ehrlich; "Preliminary Report on an Experiment with a Ring-Net in the Red Sea," by Z. Porath (Fried); "An Experiment with a Nylon Trawl-Net of the Mediterranean Type," by E. Hamburger and I. Herziger; "The Fisheries in Lake Tiberias During 1961," by M. Bar-Ilan; "Drift-Net Fishing in the North Sea," by B. Kimor; and "Norwegian Sardine Fishery," by A. Abrahamsen.

KOREA:

Central Fisheries Inspection Station, no. 4293, 223 pp., illus., printed in Korean with table of contents and statistical table headings in English. Ministry of Agriculture and Forestry, Central Fisheries Inspection Station, Seoul, Korea, December 1961. Contains a general review and results of fishery inspection, production, and consumption of manufactured fishery products, and related subjects.

Korea Statistical Yearbook, Ninth Edition, 438 pp., illus., printed in Korean and English. Bureau of Statistics, Economic Planning Board, Seoul, Korea, 1962. Includes, among others, a chapter on fisheries which contains the following sections: exports of marine products by years; number of households engaged in fisheries; fishing boats; shipping boats; processed marine products by kind; fish catches by species; exports of marine products by country; and production of marine products. The latest data shown are for 1961 and comparative data are also included.

LABELS:

Read the Label on Foods, Drugs, Devices, Cosmetics, and Household Chemicals, FDA Publication No. 3, Revision No. 3, 37 pp., illus., printed, 20 cents. U. S. Department of Health, Education and Welfare, Food and Drug Administration, Washington 25, D. C., 1961 revision. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A booklet designed to furnish the consumer with information necessary to properly read labels on foods, drugs, devices, cosmetics, and household chemicals. Includes data on what is required of manufacturers by law, and what the consumer should look for when reading labels of products purchased in order to get his money's worth and guard his family's health.

LABOR IN FISHERIES:

Part 784--Provisions of the Fair Labor Standards Act Applicable to Fishing and Operations on Aquatic Products, 48H, 15 pp., printed, 10 cents. Wage and Hour and Public Contracts Division, U. S. Department of Labor, Washington, D. C., 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) It is the purpose of this Part 784 of Chapter V, Title 29 of the Federal Regulations to provide an official statement of the views of the Department of Labor with respect to the application and meaning of those provisions of the Fair Labor Standards Act which govern rights and obligations of employees and employers in the various enterprises engaged in fishing and related activities and in operations on aquatic products.

LAWS AND REGULATIONS:

Requirements of the United States Food, Drug, and Cosmetic Act, FDA Publication No. 2, 61 pp., printed, 20 cents. U. S. Department of Health, Education, and Welfare, Food and Drug Administration, Washington 25, D. C., 1961 revision. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Conveys information on the Federal Food, Drug, and Cosmetic Act that will be helpful to foreign manufacturers and exporters and to United States importers who may not be fully familiar with the requirements of this United States law. The Act applies alike to products shipped in interstate commerce and those imported into the country. While this publication was prepared primarily as a guide to foreign manufacturers and shippers, it contains a summary of the major provisions of the law and regulations which should be useful to domestic producers and shippers.

LOBSTER POTS:

"The Broadstairs Folding Lobster Pot," article, World Fishing, vol. 11, no. 5, May 1962, p. 31, illus., printed. John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London, NW1, England. Describes the folding lobster pot which has been used in Broadstairs, England, for some 20 years or more. Contains illustrated instructions on how to make a lobster pot of this type.

MARINE AIDS:

List of Lights and Other Marine Aids, vol. III--Pacific Coast and Pacific Islands, CG-162, 351 pp., illus., printed, \$2.25. Superintendent of Documents, Government Printing Office, Washington 25, D. C., 1962. Covers lights and other marine aids to navigation maintained by or under authority of the United States Coast Guard on the Pacific Coast of the United States and Pacific Islands. For the convenience of mariners, there are also included the lighted aids, fog signals and radiobeacons maintained by British Columbia which may be used by vessels proceeding directly from the United States to Alaska. This volume covers the Eleventh, Twelfth, Thirteenth, Fourteenth, and Seventeenth Coast Guard Districts.

MARKETING:

Building Sales to Established Accounts, by Rowe Meador, "Small Marketers Aids No. 79, 4 pp., processed. Small Business Administration, Washington 25, D. C., May 1962. Sometimes owners of small distributing, jobbing, or wholesaling firms miss opportunities for increased sales because they take their established accounts for granted. This leaflet points out to the small marketer that the best way to build sales to established accounts is by helping his customers to increase their sales at a profit. It discusses three kinds of help which small marketers can offer through their salesmen. Salesmen can coach their customers on: (1) sales promotion, (2) stock control, and (3) cost control.

MOLLUSKS:

Marine Mollusks from Los Angeles Bay, Gulf of California, by James H. McLean, 27 pp., illus., printed. (Reprinted from Transactions of the San Diego Society of Natural History, vol. 12, no. 28, August 15, 1961, pp. 449-476.) San Diego Society of Natural History, San Diego, Calif.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Mollusks of the Tropical Eastern Pacific, Panamic-Pacific Pelecypoda, by Axel A. Olsson, 660 pp., illus., printed, \$15. Paleontological Research Institution, 109 Dearborn Pl., Ithaca, N. Y., 1961.

MOTHER-OF-PEARL:

"Twenty Fathoms Down for Mother-of-Pearl," by Winston Williams, illustrations by Bates Littlehales, article, National Geographic, vol. 121, no. 4, April 1962, pp. 512-529, illus., printed. National Geographic Society, 16th & M Sts. NW., Washington 6, D. C.

NETS:

"On the Preservation Test of Fish Net by Antibiotic Fish Oils" (Preliminary Report), by Yukio Tomiyasu and Masamichi Toyomizu, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 19, August 1953, pp. 474-475, printed in Japanese with English summary. Japanese Society of Scientific Fisheries, 6-chome, Shiba-kaigandori, Minato-ku, Tokyo, Japan.

Savings Gear Studies on Pacific Coast Flatfish, by E. A. Best, article, Bulletin No. 5, pp. 26-47, printed. Pacific Marine Fisheries Commission, 741 State Office Bldg., 1400 S. W. 5th Ave., Portland 1, Oreg., 1961.

NORTHERN RHODESIA AND NYASALAND:

(Joint Fisheries Research Organization) Annual Report, No. 10, 1960, 93 pp., illus., printed, 7s. 6d. (about US\$1.05). Joint Fisheries Research Organization, P. O. Box 48, Samfya, Northern Rhodesia, 1962. Covers activities of the Organization in Northern Rhodesia including research performed on Lakes Mweru and Kariba, and research results on Lake Tanganyika such as hydrology and plankton; sardine fishery; shoaling and vertical migration behavior of the sardines, as recorded by echo-sounding; diurnal and vertical migrations of fish, and effect of predation; the gill-net fishery for the Nile perch; and observations on the growth of juvenile Lates (Nile perch) species. Also describes activities of the Organization in Nyasaland such as research results at Lake Nyasa including hydrology, long-line fishery, gill-net experiments on Laboe mesops (Günther); length-weight relationships of some Nyasa fishes; and Bagrus meridionalis-variation in catch per unit effort and changes in gonad state. Includes three papers on fisheries of the region and a list of publications by members of the Organization.

NORWAY:

"Fiskernes Arsinntekter i 1960" (Fisheries Catch for the Year 1960), article, Fiskets Gang, vol. 48, no. 8, February 22, 1962, pp. 103-115, illus., printed in Norwegian. Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

NUTRITION:

Use of Fish in the Control of Hypercholesterolemia and Obesity, by C. M. Harlow and A. R. Morton, FAO International Conference on Fish in Nutrition Paper No. C/III/4, 3 pp., printed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

OCEANOGRAPHY:

"Gradient Measurements of Pressure Fluctuations in a Surface Sea Layer by Means of a Wave Measurer from on Board Ship," by V. F. Tsyplukhin and others, article, Okeanologiya, vol. 1, no. 3, 1961, pp. 522-530, printed in Russian. (Translation available on loan only to approved borrowers from Keeper, Science Museum Library, London, SW7, England.) Akademii Nauk SSSR, Moscow, U.S.S.R.

An Introduction to Physical Oceanography, by William S. von Arx, 431 pp., illus., printed, \$15. Addison-Wesley Publishing Co., Inc., Reading, Mass., January 1962.

Method for Calculation of the Deep Sea Currents from the Surface Current and the Gradient of the Atmospheric Pressure, by A. I. Fel'zenbaum, L. F. Fomin, and V. B. Shtokman, OTS 61-11407, 21 pp., illus., printed, 50 cents. (Translated from the Russian, Akademiya Nauk SSSR, Trudy Instituta Okeanologii, vol. 25, 1957, pp. 153-170.) Office of Technical Services, U.S. Department of Commerce, Washington 25, D. C., 1961.

Oceans, by Irving and Ruth Adler, 48 pp., illus., printed, \$2. John Day, Inc., 210 Madison Ave., New York 16, N. Y. Oceanography at elementary reading level.

ORSOM III--Croisiere "Epi" Oceanographie Physique (Orsom III--Cruise "Epi" Physical Oceanography), by Henri Rotschi, Rapport Scientifique No. 22, 65 pp., illus., processed in French. Office de la Recherche Scientifique, Et Technique Outre-Mer, 24, rue Bayard, Paris 8, France, March 1961.

"The Research Submarine Severyanka," by V. G. Azhazha, M.4715, article, Biulleten' Okeanograficheskoi Komissii, An SSSR, no. 6, 1960, pp. 66-67, printed in Russian. (Translation available on loan only to approved borrowers from Keeper, Science Museum Library, London, SW7, England.) Akademii Nauk SSSR, Moscow, U.S.S.R.

The Sea, by Leonard Engel and the Editors of Life, 190 pp., illus., printed. Time Incorporated, New York, N. Y., 1961. One of Life's Nure Library series. An extremely attractive volume containing a great deal of authentic information on the sea and the creatures which inhabit it, along with many excellent illustrations, most of which are in color. Covers a wide range of subject matter, from the chemistry of the sea to the underwater landscape and the great pyramid of life contained in salt water. Man's relationship to the oceans in the past, the present, and the future is also discussed.

"Severyanka--Results of Research Trips," M.4715, article, Biulleten' Okeanograficheskoi Komissii, An SSSR, printed in Russian. (Translation available on loan only to approved borrowers from Keeper, Science Museum Library, London, SW7, England.) Akademii Nauk SSSR, Moscow, U.S.S.R., 1960.

"Shallow-Water Oceanography," by Willis E. Pequegnat, article, Science, vol. 135, no. 3507, March 16, 1962, pp. 1000-1005, printed. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington 5, D. C. A report on the First

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Coastal and Shallow-Water Research Conference held at Johns Hopkins University October 19-21, at Florida State University from October 23-25, and at the University of Southern California from October 27-29, 1961. The chief objectives of the conference were: (1) to obtain some conception of the number of scientists who consider themselves to be engaged in shallow-water oceanographic research and training, (2) to review the nature of the work being carried out; (3) to review methods of sampling, observing, and data handling presently employed; and (4) to serve as a stimulus for future research and training in the field.

"Some Results of Oceanographic Research in the Norwegian and Greenland Seas," by A. P. Alekseev and B. V. Istoshin, article, *Soviet Fisheries Investigations in Northern Seas*, pp. 23-26, printed in Russian. (Translation available on loan only to approved borrowers from Keeper, Science Museum Library, London, SW7, England.) *Soviet Fisheries Investigations in Northern Seas*, Moscow, U.S.S.R., 1960.

"Use of the Principles of a Discrete Counter for Transmitting Data of Deep Water Measurements," by A. N. Paramonov, article, *Okeanologiya*, no. 4, 1961, pp. 710-716, printed in Russian. (Translation available on loan only to approved borrowers from Keeper, Science Museum Library, London, SW7, England.) *Akademii Nauk SSSR*, Moscow, U.S.S.R.

"Visual Underwater Observations in the Fifth Voyage of Submarine Severyanka," by O. A. Sokolov, article, *Okeanologiya*, no. 4, 1961, pp. 757-761, printed in Russian. (Translation available on loan only to approved borrowers from Keeper, Science Museum Library, London, SW7, England.) *Akademii Nauk SSSR*, Moscow, U.S.S.R.

OYSTERS:

Oyster Mortalities in Delaware and Chesapeake Bays, by Lewis Eugene Cronin, 9 pp., processed. Chesapeake Biological Laboratory, Solomons, Md., August 1960.

"Zinc-65 Levels in Oysters in the Thames River (Connecticut)," by B. W. Fitzgerald, J. S. Rankin, and D. M. Skauen, article, *Science*, vol. 135, no. 3507, March 16, 1962, p. 926, printed. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington 5, D. C.

PAKISTAN:

Investment Factors in Pakistan, WTIS Part 1, Economic Report No. 62-3, 12 pp., illus., printed, single copy 15 cents. Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., January 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Presents information on prospects for United States private investment; policy toward foreign investment; Government controls over industry; screening of investment proposals; taxation; financial facilities; and related subjects.

PARASITES:

Parasites and Diseases of Fish, vol. 42 of the *Bulletin of the All-Union Scientific Research Institute Fresh-Water Fisheries*, OTS 60-51169, 345 pp., illus.,

printed, \$3.50. (Translated from the Russian, Parazit i Bolezni Ryb.) Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.

PERU:

Anuario de Pesca, 1961-1962 (Fishing Yearbook 1961-1962), 235 pp., illus., printed in Spanish with some English summaries, \$1,100 (about US\$3.75). Ediciones Sudamericana S. A., Avenida Wilson 911, Lima, Peru. A supplement to the monthly publication *Pesca*. Contains useful information and statistical and analytical data regarding the fishing industry of Peru. Includes among others, articles on 1961 landings, Peru's fisheries and the National Fisheries Association, fisheries in the Peruvian economy, world market for fish meal, research on marine resources, fish in world nutrition, the future of the anchovy, and an economic study of Peru's fishing industry.

PHILIPPINES:

1961 Souvenir Handbook--14th Anniversary, Bureau of Fisheries, 72 pp., illus., printed. Department of Agriculture and Natural Resources, Bureau of Fisheries, Diliman, Quezon City, Philippines. The Bureau of Fisheries came into existence as a distinct bureau under the Department of Agriculture and Natural Resources on July 1, 1947, for the purpose of conservation and development of aquatic resources, developing and expanding fishery industries, and increasing fish production of the Philippine Islands. The Bureau has made considerable progress since its inception in the implementation of its program of activities. The notable accomplishments of the Bureau are described in this handbook. Also presented are several selected articles on different fisheries subjects and fisheries statistics.

POLLACK:

"Biology and Fishing Industry of Pollack," by N. V. Mironova, article, *Trudy Murmanskoi Biologicheskoi Stantsii*, no. 3, 1957, pp. 114-129, printed in Russian. (Translation available on loan only to approved borrowers from Keeper, Science Museum Library, London, SW7, England.) *Akademii Nauk SSSR*, Moscow, U.S.S.R.

POLLUTION:

Ecological Effects of Sewage Pollution in Biscayne Bay, Florida: Sediments and the Distribution of Benthic and Fouling Macro-Organisms, by J. Kneeland McNulty, Contribution No. 337, 54 pp., illus., printed. (Reprinted from *Bulletin of Marine Science of the Gulf and Caribbean*, vol. 11, no. 3, September 1961, pp. 394-447.) Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

PORTUGAL:

25 Anos de Assistencia a Gente do Mar (25 Years of Assistance to Fishermen), 59 pp., illus., printed in Portuguese, French, & English. Junta Central das Casas dos Pescadores, Lisbon, Portugal, 1962. A well illustrated pamphlet describing the vast range of achievements of the Portuguese Central Board of Fishermen's Welfare Centers in providing assistance and welfare to the fishermen and their families over the past 25 years.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

POTOMAC RIVER

Research on the Tidal Potomac, by William J. Hargis, Jr., Contribution No. 107, 7 pp., printed, 1961. (Reprinted from "Water Management in the Potomac Estuary" article, Interstate Commission on the Potomac River Basin, 1961, pp. 38-44. Virginia Institute of Marine Science, Gloucester Point, Va.

PREDATORS:

The Pilchard of South West Africa (*Sardinops ocellata*) and the Maasbanker (*Trachurus trachurus*)--Bird Predators, 1957-1958, by J. P. Mathews, Investigational Report No. 3, 35 pp., illus., printed. Administration of South West Africa, Marine Research Laboratory, Walvis Bay, South West Africa, 1961. A study of the feeding habits of three important fish-eating birds (Cape Gannet, Cape Cormorant, and Cape Penguin) and their possible effect on the pilchard population off the coast of South West Africa.

PRESERVATION:

"Antibiotic Ice in the Preservation of Some Fisheries Products," by C. Mateu and G. Varela, article, *Anales de Bromatologia*, vol. 12, 1960, pp. 271-333, printed. Sociedad Española de Bromatologia, Ciudad Universitaria (Edificio Facultad de Farmacia), Madrid, Spain.

"The Use of Biomycin for the Preservation of Cooled Fish Fillets" by T. N. Sakharova, *Chemical Abstracts*, vol. 55, April 17, 1961, 7693d, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

QUALITY:

"Quality of Fish Reaching the Consumer," article, Torry Research Station Annual Report, 1960, pp. 14-15, printed. Torry Research Station, Aberdeen, Scotland, 1961.

RADIOACTIVITY:

"Radioactive Contamination of Foods by Atomic or Hydrogen Bomb Explosion. X--Radio-Contamination of Fish Livers in 1959," by Kakuma Nagasawa, Katsuaki Kametani, and Yasumasa Kido, *Chemical Abstracts*, vol. 55, December 11, 1961, 263005, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

REFRIGERATION:

Refrigeration Engineering in the Fish Industry--A Source Book of Soviet Literature, 1922-1956, by D. N. Prilutskii, OTS 61-11414, 43 pp., processed, 50 cents. (Translated from the Russian, Bibliograficheskii Spravochnik--Kholodil'naya Tekhnika v Rybnom Khoz-yaistve, 1922-1956, Moskva 1957.) Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. A bibliographic index of articles on refrigeration engineering which appear in various Russian journals. Presented in chronological order and in three parts: technical operation and design of cold storage plants; refrigeration processing of fish and fish products, refrigeration transport; and the technique of production of low temperatures.

SALMON:

"Breeding Salmon in Fish Farms Proved Possible in Norway," by John J. Murdoch, article, *Canadian Fisherman*, vol. 49, January 1962, pp. 8-10, printed. Canadian Fisherman, Gardenvale, Quebec, Canada.

"Commercial Landings of Atlantic Salmon 1910 Through 1959," by C. J. Kerswill, article, *Atlantic Salmon Journal*, no. 3, 1960, pp. 5-6, printed. The Atlantic Salmon Association, Inc., 1559 McGregor St., Montreal 25, Canada.

"A Consideration in Regard Fishing Effects on the Salmon Drift Net about the Appearance of Catches to the Times of Laying Out or Hauling Up of the Net," by Atsui Koike, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 27, May 1961, pp. 382-388. Japanese Society of Scientific Fisheries, 6-chome, Shiba-kaigandori, Minato-ku, Tokyo, Japan.

Forsk over Vissa Orsaker till Dodlighet hos Laxrom (Experiments on the Mortality of Salmon Roe), by Arne Lindroth, 4 pp., illus., processed in Swedish. (Reprinted from *Vandringsfiskutredningen Meddelande*, Report No. 5.) Särtryck ur Ostkusten, Hudiksvall, Sweden, 1959.

Laxfisket i Ostersjoområdet under ar 1959 (Salmon in the Baltic Sea and Vicinity During 1959), by Gunnar Alm, 4 pp., printed in Swedish. (Reprinted from *Vandringsfiskutredningen Meddelande*, Report No. 7.) Särtryck ur Ostkusten, Hudiksvall, Sweden, September 1960.

"Muscle Proteins of Pacific Salmon (*Oncorhynchus*). I--A Note on the Separation of Muscle Proteins Soluble in Low Ionic Strength Salt Solutions," by H. Tsuyuki and Eve Roberts, article, *Journal of the Fisheries Research Board of Canada*, vol. 18, July 1961, pp. 637-640, printed. Queen's Printer & Controller of Stationery, Ottawa, Canada.

Orsaker till Variation i Overlevnad och Tillvaxt i 200 Tragbesattningar av Ensomrig lax och Öring (Causes of the Variation in Life Expectancy and of the Offsprings During 200 Different Seedings with Salmon and Trout), by Arne Lindroth, 23 pp., illus., processed in Swedish. (Reprinted from *Vandringsfiskutredningen Meddelande*, Report No. 6.) Särtryck ur Ostkusten, Hudiksvall, Sweden, 1959.

"On the Weight Distribution of the Fishes Caught by the Salmon Drift Nets in the Region of the Northern Pacific Ocean. I--Fundamental Study on the Weight Distribution of Rainbow Trout Caught by the Gill Nets in the Outdoor Pool; II--The Weight Distribution of Individual Fish in the Region of the Northern Pacific Ocean," by Atsui Koike, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 27, May 1961, pp. 372-381, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-kaigandori, Minato-ku, Tokyo, Japan.

SANITATION:

The Shellfish Sanitation Program of the Public Health Service, Public Health Service Publication No. 906, 4 pp., printed, 5 cents. U. S. Department of Health, Education, and Welfare, Washington, D. C., 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Contains information on how shellfish become contaminated, initial efforts at sanitary control, the shellfish sanitation program today, and shellfish toxins. Also describes the individual responsibilities of industry, state, and the Public Health Service in a joint cooperative program for the sanitary control of shellfish.

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SARDINES:

"Sardine-Like Packs with Sprats from the Caspian Sea," by M. V. Kalantarova, M. V. Maksimova, and J. K. Rogova, article, *Trudy Tekhnologiya Rybnikh Produktov*, vol. 60, 1959, pp. 81-93, printed in Russian. VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

SEAWEEDS:

"Chemical Studies on the Green Seaweed. III--On the Inorganic Components of *Enteromorpha compressa*, *Ulva pertusa*, and Their Mucilages," by Kiyo Mita, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 27, March 1961, pp. 239-242, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-kaigandori, Minato-ku, Tokyo, Japan.

SEINES:

"Certain Elements of Optimal Method of Operation in Fishing with Danish Seine," by A. V. Lestev, article, *Rybnoe Khoziaistvo*, vol. 34, 1958, pp. 37-46, printed in Russian. VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

SHARKS:

"What You Should Know About Sharks (Part 1)," by Ednard Waldo, article, *Louisiana Conservationist*, vol. 14, nos. 5 & 6, May-June 1962, illus., printed. Louisiana Wild Life & Fisheries Commission, Wild Life & Fisheries Bldg., 400 Royal St., New Orleans, La. This is the first part of an article on sharks. Describes a few of the estimated 300 species of sharks recognized in the world today, including, among other facts, their appearance, location, and feeding habits. Also contains a topographical diagram of a "typical" shark, illustrating terms used in the text.

SHRIMP:

"How Much 'Meat' is Found in Frozen Shrimp Packages?," by J. T. R. Nickerson, J. J. Licciardello, and M. M. Joselow, article, *Frosted Food Field*, vol. 34, no. 4, April 1962, pp. 31, 36, illus., printed. In view of the strong interest in the actual amount of shrimp meat offered in consumer packages of frozen shrimp, a survey was undertaken during the spring and summer of 1960. Five types of frozen shrimp were examined: raw, breaded; cooked, breaded; raw, shell on; raw, peeled; and cooked, peeled. The results of the survey are disclosed in this article, including comparative tables showing the shrimp meat content of the various types of shrimp tested.

"Prawn Farming Shows Promise," article, *World Fishing*, vol. 11, no. 4, April 1962, pp. 59-60, illus., printed. John Trundell (Publishers) Ltd., St. Richard's House, Eversholt St., London, NW1, England. Three Australians are at present making the world's first attempt to mass-breed prawns in captivity. This article discusses their experimental work and their reasons for believing that large-scale prawn farming on a sound economic basis is possible along a vast stretch of the eastern Australian coast. Although the effort is still in an experimental stage, the indications are that it will be successful, according to the article.

Shrimp Survey in the Newfoundland Fishing Area, 1957 and 1958, by H. J. Squires, *Bulletin No. 129*, 35 pp., illus., printed, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, 1961.

Contains a detailed account of equipment and methods of fishing used in a shrimp survey, and descriptions of other types of nets used elsewhere. Results of explorations by area are given, including the Gulf of St. Lawrence, southwest coast, and east and northern coasts of Newfoundland. Also includes a note on the preparation of shrimp for market.

SMALL BUSINESS MANAGEMENT:

Providing Management Talent for the Small Business, by Leon C. Megginson, *Management Research Summary*, Washington 25, D. C., October 1961. A summary of a report on a study of small businesses in Louisiana and several other Southern States. Management is defined as the function by which the objectives of an organization are attained through cooperative action. According to the report a management selection program should include (1) systematic recruitment of potential managers, (2) preliminary screening of candidates on the basis of past records and preliminary interviews, (3) further probing of their abilities through tests and references, (4) a series of intensive interviews, and (5) final selection based on all the data plus the personal judgment of the executive making the decision. The most satisfactory plans for developing executives include training both inside and outside the company.

Small Business Problem Studies, by John B. Kline and John T. Douth, *Management Research Studies*, 4 pp., processed. Small Business Administration, Washington 25, D. C., April 1962. The research reported in this summary consists of case studies of small manufacturing companies and small retail, wholesale, and service establishments in the Rocky Mountain area. In the original report, each case is presented in a narrative style and covers a particular problem confronting the owner-manager or management group. The narratives in many cases are documented by various exhibits which support the situation; for example, organization charts, cost schedules, sales records and charts, personnel schedules, maps, job descriptions, balance sheets, income statements, and inventory records.

SMOKED FISH:

"The Phenol Composition in Smoke-Cured Fish," by A. I. Yudititskaya and T. M. Lebedeva, 10 pp., illus., processed. (Translated from the Russian, *Rybnoe Khoziaistvo*, vol. 9, 1960, pp. 69-73.) U. S. Department of Commerce, Office of Technical Services, Washington 25, D. C.

SPAIN:

"La Sardina, los Tunidos, y la Anchoa en 1961" (The Sardine, the Tuna, and the Anchovy in 1961), by Mareiro, article, *Industria Conservera*, vol. 28, no. 272, February 1962, pp. 29-30, printed in Spanish. Union de Fabricantes de Conservas de Galicia, Calle Marques de Valladares, 41, Vigo, Spain.

SPINY LOBSTERS:

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the rapidly growing crayfish (spiny lobster) industry of Australia. Aspects of crayfish production are outlined. Includes production figures, vessels, methods of processing at sea, handling and processing, export regulations, and refrigeration equipment.

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_____, Volume II--Compensatory Renegotiations, Department of State Publication 7350, Commercial Policy Series 187, 110 pp., illus., printed, 35 cents. During the Tariff Conference the United States negotiated with a number of contracting parties making changes in their schedules of concessions. The results of those negotiations which have been completed are included in this report.

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Tide Tables--West Coast, North and South America (including the Hawaiian Islands), 1963, 224 pp., printed, \$1. Coast and Geodetic Survey, U. S. Department of Commerce, Washington 25, D. C., 1962. High and low water predictions.

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Questions and Answers on the New Trade Expansion Act, Department of State Publication 7364, Commercial Policy Series 188, 44 pp., illus., printed. Department of State, Washington 25, D. C., April 1962. On January 24, 1962, President Kennedy proposed to the Congress a new Trade Expansion Act to replace the Trade Agreements Act of 1934, which is scheduled to expire June 30, 1962. The new act, the President explained, is designed to meet the needs of the U. S. in the changed trading world of the 1960's. This publication has been prepared to answer numerous questions that have arisen during the wide and necessary public discussion of the proposed legislation.

TRADE LISTS:

The U. S. Department of Commerce has published the following mimeographed trade lists. Copies may be obtained by firms in the United States from the Commercial Intelligence Division, Office of Trade Promotion, Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C., at \$1 a copy.

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"Tuna Harvest," by Gerald V. Howard, article, *Fishing News International*, vol. 1, no. 3, April 1962, pp. 22-23, 25-26, 29, illus., printed, 6s. 6d. (about 90 U.S. cents). Arthur J. Heighway Publications, Ltd., Ludgate House, 110 Fleet St., London, EC4, England. Describes the tuna industry around the world, including characteristics of various species of tuna, amount of landings, fishing methods, and condition of resources. Also contains a map showing world-wide distribution of the albacore tuna.

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"Russia: Advanced Ocean Fishing Country," by J. L. Kask, article, *Fishing News International*, vol. 1, no. 3, April 1962, pp. 9-13, illus., printed, 6s. 6d. (about 90 U.S. cents). Arthur J. Heighway Publications, Ltd., Ludgate House, 110 Fleet St., London, EC4, England. Describes the planning and organization that lies behind the rapid development of the Russian fishing industry which, in a very few years, transformed an on-seafaring nation into one of the most advanced ocean fishing countries in the world. The author's on-the-spot look at some of the fishing ports as well as demonstrations of fishing on the Black and Caspian Seas and on the Volga River, complemented by seminar reviews of all phases of fisheries, planning, development, and research in the U.S.S.R. by authorities in those fields forms the background and source of the information on which this report is based. In conclusion, the author states that: "Judging from past performance, present activities and stated policy, it appears safe to predict that the U.S.S.R. will continue to expand and intensify her ocean fishing in all international waters. She seems to be tooling up scientifically and operationally to do a thorough job."

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Research Vessel Design, 618 pp., illus., processed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961. Reprints of papers and discussions presented to the FAO Research Vessel Forum in Tokyo Sep-

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tember 18-30, 1961. The purpose of the meeting was to exchange information on all important technical aspects of the design and operation of research vessels, particularly those for fishery research, and to provide such experts as oceanographers, biologists and naval architects who work, or may have occasion to work, in this field an opportunity to discuss these problems.

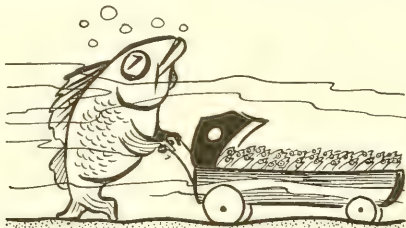
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by Hideo Higashi and others, Chemical Abstracts, vol. 55, November 13, 1961, 23865g, printed, American Chemical Society, 1155 16th St. NW., Washington, D. C.

WORLD TRADE:

Import Tariff System of Mexico, Operations Report No. 62-16, WTIS Part 2, 2 pp., printed, 10 cents, Bureau of International Programs, U. S. Department of Commerce, Washington, D. C., April 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)



Prolific fish—such as carp—often deposit as many as 150,000 eggs annually.

HADDOCK

The mating call of male haddock, said to sound somewhat like the noise made by an outboard motor, has been tape-recorded by marine biologist Per Hognestad at Tromsø Aquarium, Tromsø, Norway. (News of Norway, May 3, 1962, Norwegian Information Service.)

Editorial Assistant--Ruth V. Keefe

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* * * * *

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OUTDOOR CLAMBAKE



12 dozen steamer clams
12 ears of corn, in the husks
Lemon wedges

12 baking potatoes
12 live lobsters (1 pound each)
Melted butter or other fat

Wash clam shells thoroughly. Wash potatoes and cut off ends. Remove corn silk from ears of corn and replace husks.

Use a large metal container, similar to a thirty-gallon galvanized garbage can, with a tight fitting lid. Have 5 baskets with folding handles made to fit inside the container. The bottom of the baskets should be made of half-inch, galvanized wire mesh. Place 3, 6-inch high supports in the bottom of the container.

Put water in the bottom of the container to a depth of about 5 inches. Place potatoes in a basket and place on supports in the container. Finish filling container by placing corn in the next basket, lobsters in the next two baskets, and clams in the top basket. Cover container and place over a hot fire. Steam for 1 hour. Remove baskets. Crack lobster claws. Serve with lemon wedges and melted butter. Serves 12.



From Fisheries Marketing Bulletin "Outdoor Fish Cookery"
issued by the National Marketing Services Office,
U. S. Bureau of Commercial Fisheries, Chicago 5, Ill.

ROBERT H GIBBS JR

COMMERCIAL FISHERIES REVIEW

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Fishes



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AUGUST 1962

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Washington, D.C.



COMMERCIAL FISHERIES REVIEW



A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor

Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

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5/31/63

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RADIOACTIVITY IN FOODS

The amount of radioactivity now being found in food does not warrant any action by the Government, or any change in buying or food preparation habits of the United States consumer. If the situation should change, the public and appropriate public health officials at all levels of Government will be kept informed. Channels of communication already exist to assure that this is done.

Should protective measures ever have to be considered, the amount of radioactivity in the total diet, as consumed, could be substantially reduced by simple and ordinary sanitary precautions such as washing and peeling, and by proper care in the use of foods which are protected from fallout by tight, impenetrable packaging. (FDA Memo for Consumers, April 16, 1962, U. S. Food and Drug Administration.)

ASPECTS OF WORLD TRADE OF INTEREST TO THE FISHERY INDUSTRIES¹

By Arthur M. Sandberg*

In speaking about fish meal and oil, one of the industry members remarked that if there is ever an industry with an international look, this is it. The reference was to the menhaden industry, and its manufacture and sale of fish meal, oil, and solubles. Therefore, certain aspects of world trade are of concern and interest to the fishery industries.

World trade is a broad and complex subject so this article will be limited to a description of several major international trade organizations and some recent developments that are shaping foreign trade policies.

EUROPEAN ECONOMIC COMMUNITY

One of the important developments affecting world trade in fishery products is the formation of the European Economic Community or Common Market. This is already bringing about changes in world trade patterns. Six nations--France, the Federal Republic of Germany, Italy, Belgium, Luxembourg, and the Netherlands--have agreed to enter into a complete economic union. This union involves a promising market of about 170,000,000 people, one comparable in size to that in the United States.

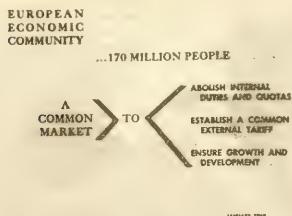
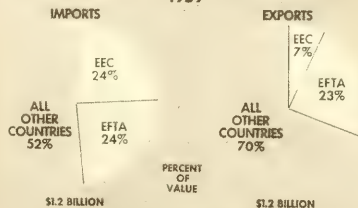


Fig. 1 - The EEC unites six nations in an economic union known as the Common Market.

WORLD TRADE IN FISHERY PRODUCTS 1959



Note: Trade of 95 countries; USSR and a number of other countries are not included.

Fig. 2 - EEC (Common Market) accounts for 24 percent of world imports of fishery products and 7 percent of exports.

In terms of total dollar value of world fishery imports, the Common Market takes 24 percent of the total trade. It accounts for 21 percent of total United States exports of fishery products. In recent years, the bulk of United States exports to the Common Market have consisted of fish oils, amounting to some \$8,000,000 to \$10,000,000 annually.

¹/Adapted from a statement at the National Menhaden Convention Sponsored by the Virginia Fishermen's Association, February 13, 1962, Old Point Comfort, Fort Monroe, Va.

* Trade and Tariff Specialist, Branch of Foreign Fisheries and Trade, Division of Industrial Research, U. S. Bureau of Commercial Fisheries, Washington, D. C.

The Treaty of Rome of March 27, 1957, provides for the gradual elimination of tariffs and quotas on trade among the six countries of the Common Market. Because the present individual tariffs of member countries differ widely in the level of duties, the treaty generally provides for setting up a single "average" common tariff on imports of products from outside the area. The new duties are scheduled to become effective gradually over a period of about 10 years, possibly by 1970.



Fig. 3 - The European Common Market accounts for 21 percent of United States exports of fishery products.

In setting up their external tariffs, the Common Market countries have decided that fish oils shall remain free of duty. Fish oils will benefit by much more favorable duty treatment than many other fishery products. The proposed duty on fish meal is 5 percent ad valorem. Under the gradual application of the duties, the present national fish meal duties would be lowered in Italy, West Germany, and France, but increased in Belgium, the Netherlands, and Luxembourg, until at the end of 10 years all would apply the 5 percent duty. Fish solubles would be dutiable at 9 percent and whale oil at 2 percent. Proposed duties on canned fish will range from 18 to 25 percent; fish fillets will be 18 percent.

Normal trade with the Common Market in fishery products may be altered by the new level of duties and by special arrangements by which member countries will support the fishery segment of their economy under a common fisheries policy. On the other hand, it is possible that a higher standard of living may have beneficial effects on total fishery trade. For example, there are favorable prospects for an increase in the use of fish meal because of expanding poultry production.

The Common Market countries, in their effort to promote growth and development, will develop a common fishery policy. This policy could provide for the mobility of labor and capital, supports to fisheries, special marketing schemes, fishing by vessels of one country in territorial waters of another, or grant permission for vessels to land their fish catches freely in another Common Market country. We do not know yet what special market or support devices might be established in the Common Market; these are to be decided upon in the next few years by the EEC Commission.

Recently the United Kingdom and Denmark petitioned for membership in the Common Market. The conditions under which these countries would be permitted entry are now being

COMMON MARKET TARIFF RATES ON FROZEN FISH FILLETS 1960

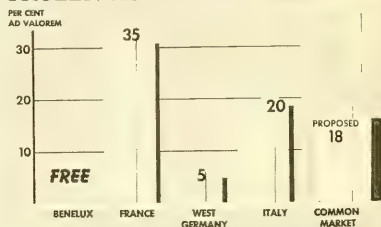


Fig. 4 - In the Common Market, present national duties on fillets will gradually adjust to a uniform level by 1970.

EFFECT OF EEC DUTIES

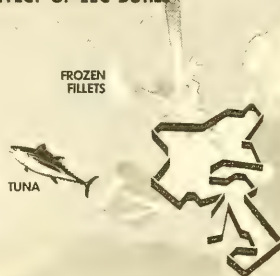


Fig. 5 - Increased Common Market import duties may divert present trade to other countries.

negotiated. There is some question how the British Commonwealth countries would participate should the United Kingdom enter the Common Market. Assuming that the United Kingdom application will be approved, it might be expected that the 10 percent duty on United States fish oil imported into the United Kingdom would gradually be reduced to the free-of-duty level of the Common Market. Should the United Kingdom and Denmark become members, the Common Market would then encompass a trading area of about 250,000,000 people. Other countries also have expressed an interest in joining the Common Market.

ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

Another organization which is expected to play an important part in the integration of Europe is the Organization for Economic Cooperation and Development (OECD). In September 1961, the OECD was established with membership from 20 countries. The United States, Canada, the six Common Market countries, the United Kingdom, Norway, Iceland, Sweden, Denmark, Portugal, Switzerland, Austria, Greece, Spain, Turkey, and Ireland are members. Through cooperative actions, the OECD hopes to spur the economic growth of its members, to encourage worldwide trade and investment, and to aid the lesser-developed countries of the world in economic expansion.

An OECD Fisheries Committee was established to carry out a program to promote the harmonious development of fisheries and to iron out trade problems. This Committee will have close links with the OECD Trade Committee and others dealing with economic policies. Since September 1961, the Fisheries Committee has met twice in Paris to consider such major trade problems as subsidies and supports, import restrictions, sanitary requirements, and marketing practices. A. W. Anderson, formerly Assistant Director of the U. S. Bureau of Commercial Fisheries,

and now Regional Fisheries Attache in Copenhagen, is vice-chairman of the OECD Fisheries Committee.

ORGANIZATION FOR ECONOMIC COOPERATION & DEVELOPMENT



Fig. 6 - Through cooperative actions, the OECD will spur economic growth, encourage trade, and aid lesser-developed countries.

ORGANIZATION FOR ECONOMIC COOPERATION & DEVELOPMENT

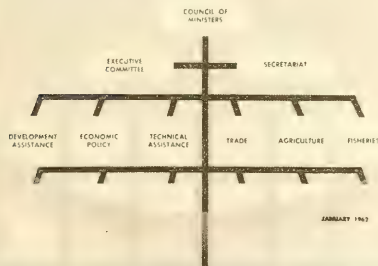


Fig. 7 - A Fisheries Committee in OECD will work closely with other committees concerned with economic policies of member countries.

ORGANIZATION FOR ECONOMIC COOPERATION & DEVELOPMENT

OECD

FISHERIES COMMITTEE

PROGRAM OF WORK . . . 1962

- SEEK REMOVAL OF SUBSIDIES AND IMPORT RESTRICTIONS
- PROMOTE QUALITY STANDARDS
- DEVELOP IMPROVED PACKAGING
- SIMPLIFY SANITARY REGULATIONS
- PROMOTE FISH CONSUMPTION

JANUARY 1962

Fig. 8 - The OECD Fisheries Committee will promote harmonious development of fisheries.

GENERAL AGREEMENT ON TARIFFS AND TRADE

Some 40 countries of the world have banded together in an international forum for the operation and administration of trade agreements. This organization is known as the General

GENERAL AGREEMENT
ON TARIFFS & TRADE



JANUARY 1962

Fig. 9 - GATT is a multilateral agreement to reduce trade barriers and expand trade.

designed to maintain the value of tariff concessions and expand international trade.

Agreement on Tariffs and Trade (GATT). The member countries account for about 85 percent of total world trade. Under the GATT, six rounds of trade agreement negotiations have been held. The last round of tariff negotiations was recently concluded in Geneva; the details of negotiations between the Common Market and other member countries, including the United States, were reported previously in this periodical.^{1/}

Apart from bargaining for mutual reductions in import duties, other GATT activities include actions to reduce or eliminate quotas, internal levies, discrimination, subsidies, customs formalities, and other obstacles to trade. Commitments under the GATT are

OUR CHANGING TRADE POLICIES

Many articles in the press lately have covered the request the President made to the Congress for broad authority to reduce United States import duties in exchange for equivalent concessions from the European Common Market and other countries. Known as the "Trade Expansion Act of 1962," the bill (H. R. 9900) being considered by Congress would grant the President new authority to negotiate trade agreements, to lower existing duties by 50 percent, and even eliminate tariffs on products now dutiable at 5 percent or less and on products where the United States and the Common Market account for 80 percent of total world trade. It would also allow negotiation on broad categories of goods rather than on an item-by-item basis as in the present negotiating authority.

Safeguards like the "escape clause" and "peril point" would be retained. But the new definitions are based on determination of significant idling of plants and workers as the result of increased imports because of reductions in duty. Temporary tariff relief could be granted, where essential, to assist those industries injured by a sudden influx of imports. A reserve list would set aside any item from negotiations if it were determined not to be in the best interest to reduce its duty.

Recognizing that some United States firms and workers might be hurt by lower duties and increasing imports, the President also asked the Congress for authority to give adjustment assistance. Under such a program, United States enterprises idled by increased imports may be assisted in meeting import competition and making economic adjustments. As an alternative to granting tariff relief, an expanded program of tax relief, loans, loan guarantees, and technical assistance would be provided to aid firms to modernize and diversify their operations. The objective would be to strengthen the efficiency of affected firms and workers. The President has stated that the adjustment assistance would be designed to strengthen the efficiency of the economy, not to protect inefficiencies. The accent is on adjustment, not assistance.

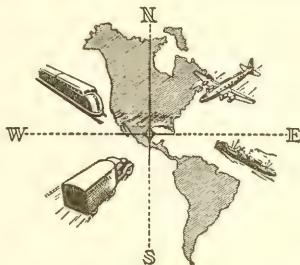
Provision would be made for various forms of tax relief such as a special carry-back of current operating losses from 3 to 5 years. Long-term loans at as low as 4 percent interest and for terms up to 25 years would be made where necessary to provide financial assistance if other financing were not available. Readjustment allowances would be given to workers idled by imports. Workers would get up to 65 percent of their average weekly wage for up

^{1/}See Commercial Fisheries Review, June 1962 pp. 1-6.

to 52 weeks, vocational education and training for higher or different skills, or financial aid to relocate to a different place.

CONCLUSION

This briefly outlines some of the organizations and international developments influencing and shaping United States foreign trade policies. Resulting actions will have a direct bearing on many United States fishing industries. The industrial fisheries would be well advised to carefully consider these developments and their probable effect on the fish meal and oil industries.



ALASKA FUR SEAL GUARD HAIR HAS MANY USES

Industry finds more and more uses for materials that might otherwise be wasted; one of the most recent examples is Alaska fur seal guard hair, which is now an article of commerce sold for a number of purposes.

Almost all fur-bearing animals have two kinds of hair--fine fur, which is very smooth and silky, and guard hair, which is longer and tougher than the fine fur and serves to protect it. Most animals have far less guard hair than fine fur, and in mink and silver fox wraps, the guard hair (until it breaks off) adds a fashionable note. But the guard hair of the Alaska fur seal is very dense and must be removed to produce the beautiful furs required by the market. The process is still carried out by hand; men scrape the furs with curved, two-handled steel knives quite similar to the bone knives used by the ancient Egyptians for removing hair from animals. About 70,000 pounds of Alaskan seal guard hair becomes available every year.

For many years, guard hair was only a waste product, bringing at best a few cents a pound on the open market. Then, both in Europe and in the United States, it came to be used as an ingredient of sweaters, thick fabrics, and skirts. Manufacturers were able to point to the content of genuine guard hair of the Alaska fur seal as a sign of great luxury, and the market value increased spectacularly--but it also fluctuated wildly, in response to the whims of fashion.

To stabilize the market, the producers have developed new uses for guard hair, taking advantage of its unique properties--primarily a "three color" appearance. The very tip of a guard hair is white; the predominant color is glossy black, and there is a straw-colored root. Incorporated in decorative papers, the graceful arch of the guard hair creates a unique, soft textural background of random patterns. Proposed applications include stationery, cover stock for books, reports, etc., wallpaper, lampshades, and underlays for countertops. (*Industrial Bulletin*, April 1961.)

USE OF ENVIRONMENTAL AND ECONOMIC FACTORS TO CHECK BIOLOGICAL FLUCTUATIONS IN MAINE LOBSTER POPULATION

By Robert L. Dow*

After two decades (1919-1940) of low fishing intensity (6.5 million pounds annually), the Maine lobster (*Homarus americanus*) fishery expanded rapidly (15.8 million pounds annually) during World War II and subsequent years (1941-1951) to enter a period of high yield (22.4 million pounds annually). The years with greater landings were associated with intensive fishing activity. Since 1919, an unaccounted for variance in the yield of the fishery has not exceeded ± 10 percent. Biological sampling indicates that the catch now consists of approximately 90 percent newly-recruited post-moult lobsters.



Fig. 1 - A Maine fisherman unloads his catch of lobsters at a selling dock.

The influence of environmental and economic factors on landings from the fishery has been reported by several investigators. Average April-May sea water temperature is associated with the number of lobsters available to the post-moult July-August fishery. The July-August supply regulates the summer price which, in turn, influences fishing intensity during both the lobster seasonal year (July-June) and the calendar years following (R. L. Dow 1961).

Since it is possible to predict landings and, by inference, available abundance, by the measurable variables: temperature, landed value, and fishing intensity, any significant (± 10 percent) deviation from prediction is indicative of probable biological changes; i.e., frequency of moult, natural mortality, or year-class survival.

*Research Director, Maine Department of Sea and Shore Fisheries, Augusta, Maine.

U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
SEP. NO. 654



Fig. 2 - Typical Maine boat hauling in a lobster trap.

Subnormal winter-spring sea water temperature is associated with delayed moult and a depressed first-half lobster-year catch. Recovery of the fishery during the second-half of the lobster year or during the following calendar year indicates that the decline in the rate of recruitment caused by retarded growth has been temporary only. Failure of recovery despite a return to favorable water temperature levels would serve to warn of the probability of a more significant biological change. The effect of this modification might not become evident, in the case of year-class survival, for a period of five years or more, while any change in the rate of natural mortality would require confirmation by other evidence.

The table shows the order of magnitude relation among the several variables and landings during the decade 1952-1961, is therefore proposed as a means of checking the biological fluctuations in the Maine lobster population.

The Order of Magnitude Relation in the Maine Lobster Fishery Among the Several Variables and Landings in the Decade 1952-61						
Current Year				Following Year		
Year	April-May Sea Water Temp.	July-Aug. Lobster Landings	July-Aug. Price	Year	Jan.-June Lobster Landings	Jan.-Dec. Lobster Landings
	°F.	Million Lbs.	¢/Lb.		(Million Lbs.)	
1953	50.0	8.1	35	1954	3.6	21.7
1955	48.6	8.3	32	1956	3.2	20.6
1954	48.5	8.1	34	1955	3.8	22.7
1957	48.0	7.8	35	1958	4.4	21.3
1952	47.6	7.1	42	1953	4.1	22.3
1960	46.6	6.5	44	1961	4.3	20.9
1958	45.8	6.0	50	1959	4.4	22.3
1956	45.0	5.1	50	1957	4.1	24.4
1959	44.8	5.3	51	1960	4.5	24.0
1961	44.5	4.7	59	1962	-	-

In 1961, the lowest May sea water temperature since 1943 retarded the rate of sublegal lobster recruitment by approximately 6.5 percent below that predicted. The duration of this influence may be appraised by the behavior of the fishery during 1962 and subsequent years.

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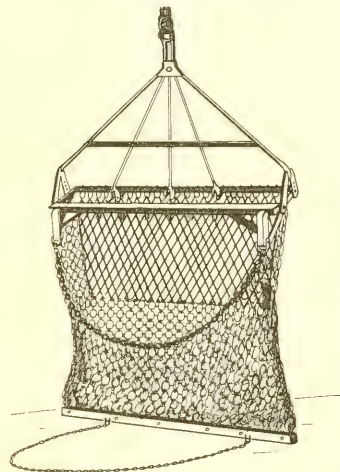
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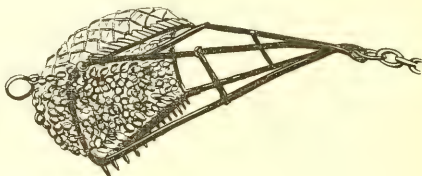


COMMON DREDGES

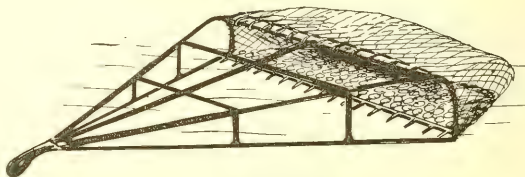
The common dredge consists of a metal triangular or oblong frame, to which is attached a bag net made of iron rings, S-hooks, and/or cotton cording. The frame is equipped with a raking bar generally with teeth on the lower edge. The implement is used in gathering shellfish (oysters, crabs, and scallops). There is really no standard design for a dredge; each fisherman has his own ideas on what makes an efficient gear and modifies and alters the basic design to suit himself. Dredges are of various sizes and dimensions.



Scallop dredge



Oyster dredge



Crab dredge

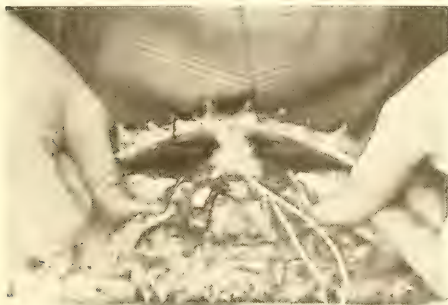
Note: Excerpt from Circular 109, *Commercial Fishing Gear of the United States*, for sale from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., single copy, 40 cents.

TRENDS AND DEVELOPMENTS

Alaska Fisheries Investigations

ALASKA STATE-FEDERAL COOPERATIVE KING CRAB RESEARCH:

The king crab biological research programs of the Alaska Department of Fish and Game at the Kodiak Research Center and the U. S. Bureau of Commercial Fisheries Biological Laboratory at Auke Bay have been coordinated. The Bureau Laboratory's research efforts are to be concentrated on the continental shelf west of Chirikof Island and the Alaska Center's efforts are to be concentrated on studying the Kodiak stocks of



Tagging king crab in Alaska.

king crab. One of the research groups also is to place a research biologist aboard the Bureau of Commercial Fisheries exploratory fishing vessel that will be working Portlock Bank (near Kodiak) this summer. Alaska Department biologists will continue to handle collection of all king crab tags.

LITTLE PORT WALTER SALMON STUDIES:

At Little Port Walter the peak migration of pink and chum fry occurred in Sashin Creek between April 25 and May 25. By May 25 the total fry escapement was 5.7 million pinks and 123,000 chum fry. The numbers of each species leaving Sashin Creek this

spring will be in close agreement with the abundance of pre-emergent fry estimated in late March. At that time about 6.3 million pink and 123,000 chum pre-emergent fry were estimated to be present in Sashin Creek spawning beds. The 1962 migration from Sashin Creek is the largest on record for both pink and chum fry since enumeration started on pink fry in 1941 and chum fry in 1943. The largest previous recorded migration of pink fry occurred in 1960 with 5.3 million and chum fry in 1945 with 38,000.



Fish eggs and "fry," or baby fish.

Twelve SCUBA-equipped biologists from the Auke Bay Laboratory participated in an intensive survey of the Sashin Creek estuary and obtained information on the ecology, distribution, movement, and school-size of pink salmon fry, both in the estuary and along the coast of Chatham Strait. An intense phytoplankton bloom was under way in the inner bay, limiting visibilities to 4 feet or less. Nearly all fry were situated in the upper 2 feet of the water column, and fry were infrequent at depths of 3 feet or greater. The larger schools of fry seemed to be farther from the shore and in deeper water than the smaller schools. Foraging individuals appeared to be giving most attention to the surface and the upper four feet. Potential predators noted in the upper four feet included juvenile coho salmon, kelp greenling, adult herring, and whiting. All, however, were in such small numbers that they would be incapable of taking large numbers of fry. Deeper dives in the outer harbor and along the coast disclosed a surprising dearth of fish at depths between 30 and 80



SCUBA divers have learned many things about fish and fishing.

feet. Whether this scarcity is seasonal or permanent is not known at present.

AUKE BAY ESTUARY SALMON STUDIES:

Migrant salmon indexing experiments in Auke Creek and Bay were nearly complete in May 1962. Preliminary analyses indicate: (1) Over 65,000 pink salmon fry entered the bay from Auke Creek (75 percent between May 6-14). (2) Over 30,000 pink migrants were captured in 2 floating traps in Auke Bay (80 percent between May 12-18). It is believed that these fry were predominantly from Auke Creek. (3) A reliable method of counting fry migrants photoelectrically was developed. Auke Creek experiments for pinks resulted in 1 out of every 2, 3, and 9 fry being recorded by the counter on the aperture and photocell positions; for sockeye smolt in Auke Creek, 1 out of every 2 smolt were counted by the photocell. (4) Salt-water holding pen experiments for pink salmon entering Auke Bay will continue as long as possible. The first experimental group of Auke Creek migrants was placed in the pens April 1, and a weekly sample has been taken throughout the run. Weekly length frequencies are being obtained for each complete experiment, using a simple photographic technique developed for the purpose. Results indicate: (a) a highly favorable estuary environment (only one mortality attributable to a natural cause); (b) growth rates comparable to those obtained in similar experiments in Smeaton Bay near Ketchikan in 1956, 1957, and 1958. (5) Sockeye smolts leaving Auke Lake reached a peak on May 21, which is 2 weeks later than the peak in 1961. The run through May was estimated in excess of 40,000 sockeye smolts.

HERRING SPAWNING STUDIES:

Herring spawning took place in Auke Bay during late April and early May. The spawning in 1962 appears to be somewhat lighter than usual, although it was spread over a large area. The crop of rock weed (a preferred substrate for spawning) appeared to be considerably smaller than usual this year which may be reflected in the widespread nature of the spawning activity.

Herring eggs deposited in April and early May began hatching toward the end of May. Efforts to take herring larvae with a high-

speed plankton sampler have not yet been successful. Since the samplers used have shown considerable success in capturing other fish larvae and juveniles of considerably larger size than herring larvae, it would appear that the herring larvae were not accessible in Auke Bay. Either they are too close to the beach or at too great a depth to be successfully sampled with the present procedure, or they may have been carried out of the bay by tidal currents immediately after hatching.

KARLUK LAKE SOCKEYE SALMON STUDIES:

Sockeye salmon smolt catches out of the Karluk River were extremely light until May 18 when the out-migration increased in magnitude. The first few adult sockeye salmon appeared at the Karluk River weir site on May 16, which is almost 2 weeks earlier than in 1960 and 1961. Fry migrations into Karluk Lake from Meadow Creek and Grassy Point peaked in early May. Based upon a mark and recovery method using stained fry, Meadow Creek contributed about 275,000 fry and Grassy Point about 234,000. The Grassy Point fry run in 1962 is about one-half of that of 1961.



Alaska

DOUGLAS MARINE STATION BEING SET UP:

Plans were being completed in May 1962 for setting up the Douglas Marine Station of the Marine Science Institute, University of Alaska. It will be located in the former Mayflower School Building in Douglas, Alaska (near Juneau). The Station will be used as a research laboratory and graduate training school. Two oceanographers, both from Texas A. and M. are already there. Three additional researchers were expected.

The research program for the new Marine Station is expected to be well under way by fall. The Director of the Marine Science Institute stated that he hoped the Station would have a research vessel in the near future.



American Fisheries Advisory Committee

INTERIOR DEPARTMENT ADVISORY GROUP VIEWS STATUS OF FISHERIES:

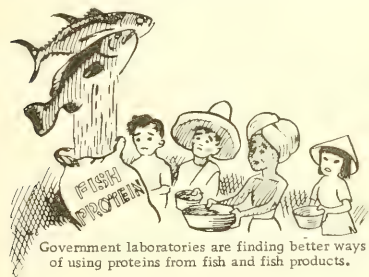
A searching look at the present status and future of the Nation's commercial fisheries was taken by the American Fisheries Advisory Committee at its 14th meeting, held May 24 and 25, 1962, in Washington, D. C. The meeting was opened by Frank P. Briggs, Assistant Secretary of the Interior for Fish and Wildlife, who called for serious deliberations by the Committee on problems facing the American fishing industry.

The Committee, an advisory group to Secretary of the Interior Stewart L. Udall, spent much of its session working as four study groups, composed of five members each. These groups assessed the Atlantic area, the Pacific area, the Gulf and Caribbean area, and the Inland areas, reporting to the full Committee and the Bureau of Commercial Fisheries on the current status of the fisheries in those areas and what the situation is likely to be in the immediate future and in 1975.

Significant among the findings were the growing effect of international activities upon the fisheries and the need for long-range planning. The increasing amounts of fishery products being imported into the United States, the competition with other nations for the resources of the sea, and the need for using presently untapped fish species also were stressed.

The groups also recommended to the Bureau of Commercial Fisheries an acceleration of its marketing program. The Committee felt that some United States markets lost to imports could be regained by an aggressive promotion of fishery products and that the per capita consumption of fish in the United States could be increased through such means as consumer education on the nutritional value of fish. The need for improved and consistent quality also received considerable attention.

Under Secretary of the Interior James K. Carr addressed the meeting and emphasized the potential of increased fish production as a means of utilizing all marine resources, of providing an opportunity for tremendous expansion of the fishing industry, and of the United States taking the lead in solving world-wide problems of hunger and malnutrition. Carr said the Department is solidly behind a proposal to manufacture fish protein concentrate from whole fish for human consumption and said he is optimistic about the manufacture and distribution of this protein supplement on a world-wide basis.



The Bureau of Commercial Fisheries described its work in the fish protein concentrate field. The Bureau is exploring various methods for manufacturing the concentrate, including chemical and other extraction processes that have shown promise. The Bureau's preliminary findings indicate that fish protein concentrate is a cheap, highly nutritional, easily stored, and transported product with a variety of uses.



America belongs to nine International Commissions dealing with the produce of the sea.

Among other Bureau programs reviewed for the Committee were the Bureau's participation in the Tropical Atlantic Oceanography Survey, its vessel construction differential subsidy program, its student fellowship program, and its long-range program planning.



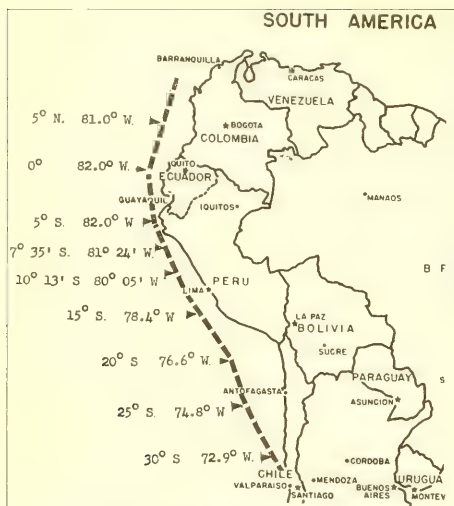
Antarctica

FISHERIES AND OCEANOGRAPHY INCLUDED IN RESEARCH VESSEL "ELTANIN" STUDIES:

On the first leg of her voyage to Antarctica to begin scientific operations in polar waters, USNS *Eltanin* left New York on May 23, 1962, for Valparaíso, Chile. In addition to regular scientific studies that can be made during the voyage, the ship will make nine special stops between Panama and Valparaíso for oceanographic studies related to Antarctic research. The vessel was expected to arrive in Valparaíso in late June.

USNS *Eltanin* is a floating research laboratory maintained by the National Science Foundation. Scientific projects carried out aboard the ship are funded and coordinated by the Foundation, and operation of the ship is by the Military Sea Transportation Service.

On her cruise southward, the *Eltanin* will make two major stops in the Peru-Chile trench, where bottom trawls will be made by the University of Southern California marine biology group aboard and piston cores



Oceanographic Stations USNS Eltanin (May-June 1962).

will be obtained by Florida State University personnel. The Florida State group will obtain piston cores at three additional locations, and at all nine stops hydrographic stations will be made for Texas Agricultural and Mechanical College scientists.

Because of the interest expressed in these studies, the voyage has been designated Cruise 3 of the Eltanin to indicate that scientific observations are an important mission of the voyage.

Cruise 2, the major shakedown cruise of the ship following her conversion for research purposes, was made between March 15 and April 16, 1962, between New York and an area in the Labrador basin near Greenland. The area was chosen to duplicate as closely as possible Antarctic conditions, and at the same time to obtain useful scientific data.

Only limited oceanographic studies had previously been made in the area at that time of year.

Marine biology work was carried out by the University of Southern California, with a major biological station made. Nine complete hydrographic stations were obtained by Lamont Geological Observatory in a network from the southern tip of Greenland to Labrador, from which a delineation of water masses

and ocean currents was accomplished. Lamont microbiologists made continuous studies of primary productivity of plankton of the near surface waters en route.

Cruise 1 of the Eltanin took place briefly in late February and early March 1962 to test scientific equipment.

Note: See Commercial Fisheries Review, October 1961 p. 9, August 1961 p. 16, June 1961 p. 15.



California

EXPLORATORY FISHING FOR PINK SHRIMP OFF NORTHERN AREA:

M/V "Alaska" Cruise 62-A-2 (April 17-May 29, 1962): Exploratory fishing to locate concentrations of pink shrimp (*Pandalus jordani*) in the coastal waters off central and northern California from Avila to Crescent City was the principal objective of the cruise by the California Department of Fish and Game research vessel Alaska. Other objectives were to determine size, sex, and weight of shrimp from different areas; to count and weigh incidental fish by species; and to obtain bottom temperatures in shrimp-fishing areas.

A total of 188 tows were made with a 20 x 6 foot beam trawl with 1½-inch mesh netting. The tows lasted 20 minutes. Sixty-one tows were in Area A from the California-Oregon border to Mad River; 51 tows in Area B-1 from Big Flat to Laguna Point; 43 tows in Area B-2 from Salt Point to Bodega Head; and 31 in Area C from Pt. San Luis to Pt. Sal.

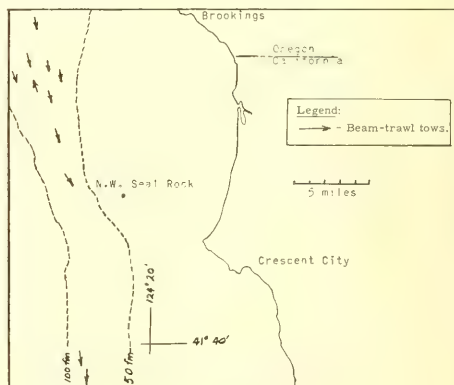


Fig. 1 - Area A.

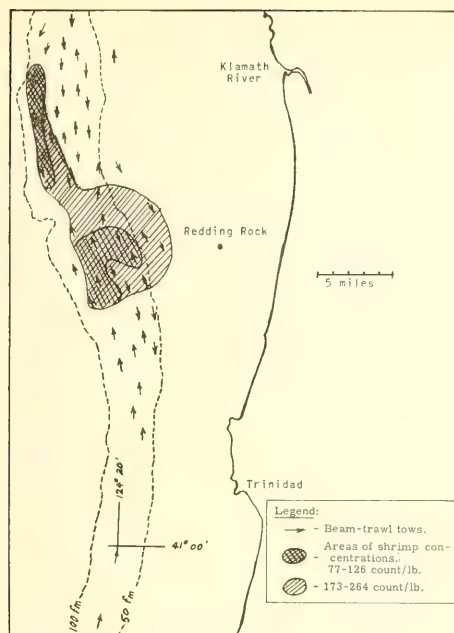


Fig. 2 - Area A.

The best shrimp catches in Area A were off the Klamath River and Redding Rock in 45 to 82 fathoms. The heaviest concentrations of shrimp were west and southwest of Redding Rock where 20-minute tows yielded up to 600 pounds. This bed was approximately 17 miles long and from 1 to 6 miles wide. Within the perimeter of the schools, 19 tows yielded shrimp at an average rate of 819 pounds per hour with a range of 105 to 1,800. The largest shrimp (mostly 2-year-olds) were generally in the deeper waters and outside the younger ones (1-year-olds). There appeared to be a definite separation by year-class. Within the area where the older shrimp were concentrated, they averaged 99 per pound (heads on) with a range of 77-126. Where the younger shrimp were concentrated they averaged 225 per pound with a range of 173 to 264. No shrimp concentrations were found between Pt. St. George and the Calif.-Oregon border. One tow off Brookings yielded 125 pounds of shrimp in 20 minutes.

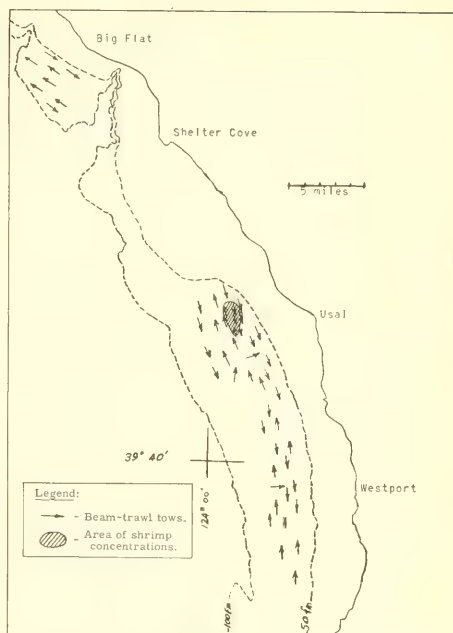


Fig. 3 - Area B-1.

Shrimp were difficult to find in Area B-1, and only one small concentration was located off Usal in 62 to 70 fathoms. The bed measured approximately $1 \times 2\frac{1}{4}$ miles. The catch rate there ranged from 525 to 1,800 pounds per hour with an average of 925. No shrimp were caught in 8 tows off Big Flat and 12 off Westport.

In Area B-2, a narrow concentration of shrimp was found between the Russian River

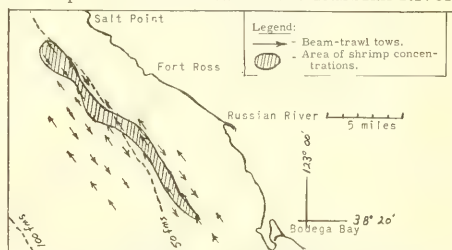


Fig. 4 - Area B-2 (Figs. 1-4 are all beam-trawling station locations of M/V Alaska Cruise 62-A-2).

and Salt Point in 44 to 56 fathoms. The best catches were made between Fort Ross and Salt Point. One of the tows produced 740 pounds of shrimp in 20 minutes. The school measured approximately 17 miles long and about 0.7 miles wide. Ten tows within the perimeter of the school produced 548 pounds per hour with a range of 138 to 2,220.

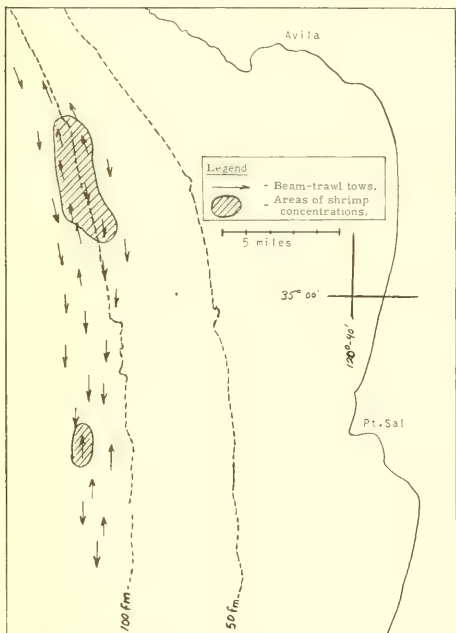


Fig. 5 - M/V Alaska Cruise 62-A-2, Area C. Location of beam trawl tows.

Area C did not yield shrimp in commercial quantity although a minor concentration was found off Pt. San Luis in 95-133 fathoms. This bed was approximately 1.5 x 5.5 miles. Six tows made from it produced an average of 123 pounds per hour with a range of 93 to 183. One tow off Pt. Sal yielded shrimp at the rate of 111 pounds per hour.

Fifty shrimp from each tow made on the shrimp beds were classified by sex, measured, and weighed.

Most of the females had completed spawning and by the latter part of May very few females were carrying eggs.

Type of Shrimp Caught by the M/V Alaska on Cruise 62-A-2				
Area	Age-group			Count Range
	I	II	III	
Klamath R.-Redding Rd.	54	41	5	160
Usal	84	14	2	166
Salt Pt. to Russian R. . .	91	9	0	170
Pt. San Luis	4	72	24	63
				No.
				77-264
				133-198
				156-197
				58-68

The catch of incidental fish was generally light because very little weight was used on the footrope. Counts and weights were taken of all species caught in the majority of the tows. The catches consisted primarily of hake (*Merluccius productus*), sand dabs (*Citharichthys sordidus*), slender sole (*Lyopsetta exilis*), rex sole (*Glyptocephalus zachirus*), Dover sole (*Microstomus pacificus*), splitnose rockfish (*Sebastes diploproa*), and striptail rockfish (*Sebastes saxicola*). The latter two species predominated in Area C catches.

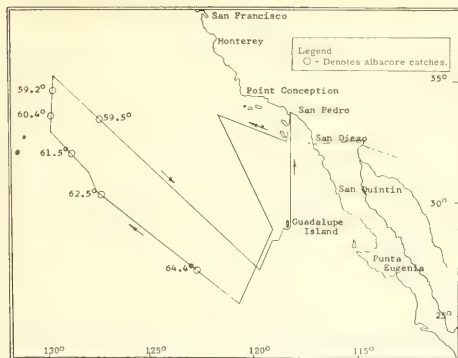
A total of 158 depth casts were made to record temperatures at the surface and the bottom at 158 stations.

* * * * *

ALBACORE TUNA MIGRATION STUDIES AND TAGGING:

M/V "N. B. Scofield" Cruise 62-S-4-Tuna (May 17-June 14, 1962): Intercepting albacore tuna schools and collecting biological data were the principal objectives of the California Department of Fish and Game research vessel N. B. Scofield during this cruise. The vessel operated in the high seas area off California and northern Baja California between latitudes 25° and 36° N. and offshore to longitude 130° W. The detailed objectives of the cruise were to: (1) intercept albacore schools approaching the Pacific coast fishing grounds prior to the fishing season and to determine their migration route; (2) collect oceanographic and biological data that may be related to albacore occurrence; and (3) tag albacore, and to take scales and stomach contents from those not tagged.

Adverse weather at the beginning of the cruise caused a revision of the cruise plan. Weather for the remainder of the trip permitted normal operations. Surface trolling gear was used during most of the 3,000-mile cruise. Nine albacore were caught. The first fish was caught 250 miles southwest of Guadalupe Island and the second, 600 miles west of Point San Quintin, Baja California. The other seven fish were caught in an area extending from 350 to 425 miles westward from



Cruise (62-S-4-Tuna) of the research vessel N. B. Scofield to study migrations of and collect oceanographic and biological data related to albacore tuna.

Point Conception, Calif. In addition, two albacore were lost while pulling in the trolling lines. Sea temperatures in the catch areas ranged from 59.2° F. to 64.4° F.

A sonic depth finder was operated whenever a fish struck the lines. It indicated fish were swimming at depths of 5 to 60 fathoms.

At 74 stations, approximately 40 miles apart, 450-foot depth readings and 10-meter Nansen bottle casts were made. A thermograph provided a continuous record of sea temperatures which ranged from 54° F. to 65.1° F. during the cruise.

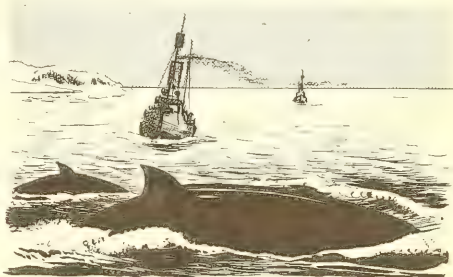
Twelve night-light stations were occupied with Pacific sauries collected at every station. Myctophids were numerous, and squid were observed at many stations. Large jack mackerel, obtained by hook and line at two stations, were saved.

Several hours were spent fishing with a rod and electric reel while drifting over the Fieberling Guyot (32°24' N., 127°52' W.). The least depth found was 242 fathoms. Although the depth finder indicated fish were present, none was caught.

Scale samples were taken from all albacore, and several parasites and food items from the stomachs were saved for analysis. No fish were tagged during the cruise.

PELAGIC FISH POPULATION SURVEY CONTINUED:

Airplane Spotting Flight 62-4-Pelagic Fish (April 9-12, 1962): To determine the distribution and abundance of pelagic fish schools, the inshore area from the United States-Mexican Border to Half Moon Bay was surveyed from the air by the California Department of Fish and Game's Cessna "182" 9042T.



The first day's survey covered the area from Redondo Beach to the United States-Mexican Border; the visibility was poor because of low clouds. No fish schools were seen but a pod of 25 sea lions was observed about 2 miles north of Scripps' pier and 2 gray whales were seen heading north.

On the second day's survey, the coastline between Los Angeles Harbor and Pt. Piedras Blancas was covered. Scouting conditions were good after the fog dispersed. Twenty-six anchovy schools were sighted off Malibu pier and 28 north of Pt. Dume. One of these was strung out for one-half mile under a reddish-colored surface streak. Between Port Hueneme and Coal Oil Point, 125 anchovy schools were counted.

Some of the anchovy schools were under the natural oil slicks at Coal Oil Point. Two school groups off Gorda Pt. were large; one was 3 miles long by about one-half mile wide and estimated to contain between 200 and 300 schools of anchovies. The other large one was estimated to contain between 100 and 200 schools. Twenty-three anchovy schools were sighted off the pier at Cayucos and three off Pt. Buchon. Five gray whales were observed going north.

No survey was made on the third day because of fog and low overcast.

Surveying conditions were excellent on the last day of the flight and the area from Half Moon Bay to San Luis Obispo Bay was covered. Two anchovy schools were spotted off Moss Landing, 18 off Santa Cruz, 1 off Sequel Pt., and 8 in San Luis Obispo Bay. Seven gray whales, all going north, were sighted.

The survey was continued May 7-11, 1962.

Airplane Spotting Flight 62-5-Pelagic Fish:

The area from Santa Monica to the United States-Mexican Border was covered on May 7, but surveying conditions were poor because of high clouds and low haze. There were some streaks of red tide off the Huntington Beach pier. Eleven schools of anchovies were sighted 2 miles north of Scripps pier and 6 off Pacific Beach. Some of these were near the beach and very visible against the white sand bottom. Thirty-five sea lions were in the same vicinity. Most of the anchovy schools sighted in the San Diego area were near the mouth of the Tia Juana River.

On May 8, no flight was possible because of fog and overcast.

Scouting conditions in the area between Santa Monica and San Simeon on May 9 were good after the fog burned off. A total of 255 schools of anchovies were sighted between Malibu and Goleta, 4 in San Luis Obispo Bay, and 1 off the Cayucos pier. Some streaks of red tide were observed off Port Hueneme.

Surveying conditions were good in the area from Long Beach to the United States-Mexican Border on May 10. There were 31 anchovy schools between San Diego and the border, most near the mouth of the Tia Juana River.

In the area between Half Moon Bay and Pt. Sal, on May 11, 38 anchovy schools were counted between the Pajaro River and Sequel Point while flying north. On the flight south, the wind had increased and only a few schools were visible.

Note: See Commercial Fisheries Review, July 1962 p. 12.

* * * * *

MIDWATER TRAWLING FOR SALMON FINGERLINGS CONTINUED:

M/V "Nautilus" Cruise 62-N-11, 5b, 5c-Salmon (April 30-May 4, May 14-17, May 21-25, 1962) and M/V "Al Larocca" Cruise 62-C-5d-Salmon (May 27-June 3, 1962): Midwater trawl operations in the Carquinez

Strait to capture marked salmon fingerlings on their seaward migration were continued by the California Department of Fish and Game research vessels Nautilus and Al Larocca. A nylon midwater trawl with 25-foot square opening, and a cotton midwater trawl with a 15-foot square opening were used.

Trawling in Carquinez Strait was conducted between 8 a.m. and 3 p.m. and each tow was for 20 minutes. All tows were alternated between upstream and downstream, and between the north shore, center, and south shore of the channel.

A total of 257 tows completed in the Strait during these cruises yielded a catch of 1,783 king salmon (Oncorhynchus tshawytscha). Of the total king salmon caught, 94 were marked fish.

Other species appearing in the catch in significant quantities were: Pacific herring (Clupea pallasii) about 120,000 fish, northern anchovy (Engraulis mordax) about 70,000 fish, Sacramento smelt (Spirinchus thaleichthys) about 10,000 fish, king salmon (Oncorhynchus tshawytscha) 1,783 fish, striped bass (Morone saxatilis) 1,223 fish, American shad (Alosa sapidissima) 616 fish, splittail (Pogonichthys macrolepidotus) 147 fish, northern midshipman (Porichthys notatus) 146 fish, and fine-scaled goby (Lepidogobius lepidus) 122 fish.



Pacific hake (Merluccius productus)

New species appearing for the first time since mid-water trawling operations began on April 10, 1961, consisted of night smelt (Spirinchus starksi) 4 fish, yellowtail rockfish (Sebastes flavidus) 1 fish, and Pacific hake (Merluccius productus) 1 fish.

Note: See Commercial Fisheries Review, June 1962 p. 7.



Cans--Shipments for Fishery Products

**BY AREAS AND QUARTERS,
1961 AND 1960:**

In 1961, the Pacific Area or West (including Hawaii and Alaska) utilized 73.4 percent of the 126,017 short tons of steel used in the manufacture of cans for fishery products.

U. S. and Puerto Rico Shipments of Steel Used for Cans for Fishery Products, 1960 and 1961

Area	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Total	
	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960
	(Short Tons)									
West 1/	14,571	16,090	30,801	30,540	27,538	23,776	19,581	17,960	92,491	88,366
East 2/	7,664	5,311	8,179	6,546	7,170	11,854	7,067	7,257	30,080	30,968
Central 3/	737	622	1,191	1,451	678	1,725	840	797	3,446	4,595
Total	22,972	22,023	40,171	38,537	35,386	37,355	27,488	26,014	126,017	123,929

1/Includes Hawaii and Alaska.

2/ " Puerto Rico and South Atlantic.

3/ " Gulf States.

Note: Statistics cover all commercial and captive plants known to be producing cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

The bulk of the fish-canning facilities are located in the Pacific Area. The Pacific Area was followed by the Eastern Area (New England, Middle Atlantic, South Atlantic, and Puerto Rico) with 23.9 percent. The Central Area (including the Gulf States and Inland States) used only 2.7 percent.

The over-all 1961 total was up 1.7 percent from the amount used in 1960. An increase of 4.7 percent in the amount of steel used for cans in the Pacific Area was partly offset by a drop of 2.9 percent in the amount used in the Eastern Area and a decline of 25.0 percent in that

used in the Central Area. The increase in the Pacific Area was due to greater packs of tuna and salmon. The decline in the Eastern Area was accounted for by a very light pack of Maine sardines. A substantial drop in the pack of canned shrimp was responsible for the drop in the Central Area.

During the second quarter of 1961, when shipments of steel for the manufacture of cans for fishery products were heaviest for all areas, canneries in the Pacific Area received 33.3 percent of the total amount they consumed, while the Eastern Area received 27.2 percent, and the Central Area received 34.6 percent.

Note: See Commercial Fisheries Review, April 1962 p. 12, August 1961 p. 21.

* * * * *

JANUARY-MARCH 1962:

The amount of steel and aluminum consumed in the manufacture of cans shipped to fish and shellfish canning plants during January-March 1962 was 10.6 percent above that used during the same period in 1961. Prior to this year, these figures covered only tin-

plate cans, but beginning with January 1962 aluminum cans are included.

During this period 584,135 base boxes of steel and aluminum were used, whereas in the same period of 1961 (when only tinplate was reported), 528,346 base boxes of steel were consumed in making cans shipped to fishery plants. The addition of the data on aluminum was only partly responsible for the increase in cans this year; most of the increase was due to greater packs of tuna, shrimp, and Maine sardines.



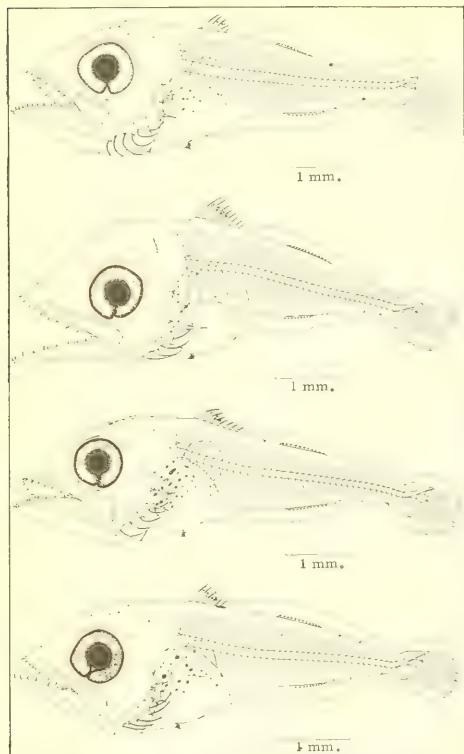
Central Pacific Fisheries Investigations

YOUNG TUNA COLLECTED FROM PREDATORS' STOMACHS:

The collection of larval and juvenile forms of tuna and tuna-like fish is one phase of the study to discover the spawning season and area of the South Pacific albacore tuna. During January-April 1962, the Charles H. Gilbert of the U. S. Bureau of Commercial Fisheries Biological Laboratory, Honolulu, in cooperation with Orsom III of the Institut Français d'Océanie, Noumea, New Caledonia, explored the intensively-fished albacore grounds of the South Pacific. Preliminary results of that expedition indicate that apex (highest form) predators may be the best collectors of juvenile tuna now available.

Examination of plankton tows from Ahi-palaha I (the winter expedition's name after the Hawaiian word for albacore tuna) has so far yielded only one albacore larva. But five young albacore tuna estimated to range from 6 cm. to 9 cm. (about 2 to 3.5 inches) were obtained from stomach contents of twoblood marlin, a yellowfin, and a wahoo.

Examination of albacore tuna gonads caught by the Charles H. Gilbert and Orsom III re-



Larvae of (top to bottom) albacore, big-eyed, Australian northern bluefin, and Pacific bluefin.

vealed that spawning had already taken place, possibly as long as two months before the expedition. This view was supported by the scarcity of larvae and the presence of young tuna.

It is known that young skipjack tuna are found regularly in the stomachs of their adults and other apex predators. In addition to the five juveniles discovered in the South Pacific, two young albacore tuna were found in the stomachs of predators caught in the North Pacific. As a result, efforts to obtain young tuna by this method will be intensified.

As more and more larvae and juvenile tuna are recorded, the spawning and nursery grounds of both North and South Pacific albacore tuna will be located. Adequate speci-

mens obtained throughout the year will help to solve the problems of age and growth during the early stages of the albacore tuna's life history.



Dams

INTERIOR DEPARTMENT RECOMMENDS MOUNTAIN SHEEP DAMSITE ON THE SNAKE RIVER:

Federal development of the remaining section of the Middle Snake River, between Idaho and Oregon, and a specific recommendation favoring the Mountain Sheep damsite were proposed on June 28, 1962, by Secretary of the Interior Stewart L. Udall.

In a letter to the Federal Power Commission, Secretary Udall recommended that licenses be denied both public and private utility groups which have applications pending and that the Commission recommend Federal construction.

License applications now pending before the Commission are from the Pacific Northwest Power Company, a combination of private utilities operating in the area, and the Washington Public Power Supply System, a combination of public utility organizations in Washington State.

Various engineering studies for the Mountain Sheep site indicate possibility of a dam approximately 665 feet high, creating a storage reservoir up the Snake and Imnaha Rivers of about 3,600,000 acre-foot capacity and with a hydropower plant with a capacity of 1,030,000 kilowatts, approximately half that of the Grand Coulee Dam. Cost is estimated at \$262,800,000.

Primary reason for recommending Federal development of this area of the river, Secretary Udall said, is because a major storage and hydro facility there would affect many fields of resource development in which the United States has vital interests.

"Its impact," he wrote the Commission, "will be so great that we recommend that the United States, and not a non-Federal entity, construct the project ultimately selected as the more desirable. Taking all resources into account, we believe that the Mountain Sheep Dam on the Snake River represents the optimum development."

Secretary Udall pointed out that a storage project on the Middle Snake River would be essentially an addition to the existing Federal Columbia River power system and that all downstream plants through which the stored water would run will be Federally owned. The 2,000,000 acre-feet of active storage at Mountain Sheep would mean 1,700 million kilowatt-hours of prime power annually at the downstream dams by stabilizing the river flow.

The proposed Mountain Sheep Dam would provide 1,550,000 acre feet of flood-control storage space. Under Federal operation, management of this storage space for power as well as flood control could be handled more effectively, thus minimizing or avoiding the possibility of conflict between the two uses. Such benefits are presently realized from Grand Coulee and Hungry Horse Dams and reservoirs, built by the Bureau of Reclamation as a part of the upstream Columbia River system. Their coordinated operation is of benefit to all downstream hydro-power facilities.

Secretary Udall said an expedited Federal fishery research program is seeking a solution to fish-passage problems over large structures and through long storage reservoirs. The Nez Perce site, proposed as a substitute location for a dam, is downstream from the confluence of the Snake and Salmon Rivers and thus would block off migratory salmon heading up the Salmon River to spawn, unless the fish-passage problem is solved.

"The Mountain Sheep Project represents less hazard to the fishery resource than the Nez Perce Project," Secretary Udall wrote. "We hope the research program will develop effective means for fish passage which can be incorporated into new and existing projects, including the Mountain Sheep Project..."

"Construction and operation of the project by the United States will assure that every effort will be made promptly to preserve and improve this important fishery resource in the light of experience and changing technology."

Secretary Udall pointed out that additional costs would inevitably arise in such extensive readjustments, thus posing an acute problem in a project constructed and operated by a non-Federal entity.

For these and other reasons as stated in the letter, Secretary Udall concluded, "We believe that the varied and predominantly Federal interests involved in the development of this area of the Snake River outweigh other considerations and indicate that the Commission should recommend to the Congress that the Mountain Sheep Dam should be built by the United States."

Note: See *Commercial Fisheries Review*, May 1961 p. 13, January 1961 p. 20.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-MAY 1962:

Fresh and Frozen: For the use of the Armed Forces under the Department of Defense, more fresh and frozen fishery products were purchased in May 1962 by the Defense Subsistence Supply Centers than in the previous month. The increase was 9.9 percent in quantity and 28.4 percent in value. This shows that higher-priced fishery products were purchased in May. Compared with the same month a year earlier, purchases in May 1962 were up 14.4 percent in quantity and 34.0 percent in value.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, May 1962 with Comparisons

QUANTITY				VALUE			
May	1961	Jan.-May	1961	May	1961	Jan.-May	1961
1962	1961	1962	1961	1962	1961	1962	1961
2,528	(1,000 Lbs.)	9,616	9,279	1,439	(\$1,000)	5,434	4,609

During the first five months of 1962, purchases were up only 0.4 percent in quantity but up 17.9 percent in value as compared with the same period in 1961. Because of higher prices for and the purchase of higher-priced fishery products, the value of the purchases increased more than the quantity.

Prices paid for fresh and frozen fishery products by the Department of Defense in May 1962 averaged 56.9 cents a pound, 8.2 cents a pound more than in the previous month and 8.3 cents a pound more than in the same month of 1961.

Canned: Canned tuna and canned sardines were the principal canned fishery products purchased for use of the Armed Forces in May this year. For the first five months of this year purchases of canned fish were up

Table 2 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, May 1962 with Comparisons

Product	QUANTITY				VALUE			
	May		Jan.-May		May		Jan.-May	
	1962	1961	1962	1961	1962	1961	1962	1961
	... (1,000 Lbs.) ...				... (\$1,000) ...			
Tuna . . .	30	-	3,706	2,662	22	-	2,062	1,175
Salmon . .	-	-	1,015	2	-	-	638	2
Sardine . .	21	8	32	89	10	4	16	43

substantially as compared with the same period of 1961 because of greater purchases of canned tuna and canned salmon.

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.



Fish Oils

EFFECT OF DIETARY OILS ON BLOOD CHOLESTEROL:

Experiments which components of fish oils are active as cholesterol depressants. This work is being done under a U. S. Bureau of Commercial Fisheries contract awarded in 1961 to the Hormel Institute, University of Minnesota.

Results from this investigation as of March 1962 have established the following relationships between the hypercholesteremic condition: (1) whole body oils from tuna and menhaden are more effective cholesterol depressants than pure linoleate, which is one of the most active forms of essential fatty acids; (2) ester fractions from menhaden oil fatty acids have been found to be more effective cholesterol depressants than common dietary fats of either "animal" or "vegetable" origin; (3) the effects of marine oils can be duplicated by ingesting whole fish products containing these oils (i.e. menhaden, mullet, ocean perch, and silver salmon); (4) studies have shown that 8 different marine oils have a significant cholesterol depressant activity. These include the whole body oils of tuna, menhaden, herring, ocean perch, mullet, and silver salmon and the liver oils of cod and dogfish; (5) the marine oils are effective in alleviating a hyperphospholipemia condition as well as a hypercholesteremia in rats and man; these changes are accompanied by a more favorable balance between cholesterol and phospholipids in the blood and tissues of hypercholesteremic rats; (6) the changes in

circulating lipids are associated with specific changes in the distribution of classes of lipids and specific fatty acid components in the cardiovascular tissues.

In many of these studies an attempt has been made to correlate the observed changes in plasma cholesterol levels with changes in the other circulating lipids and with the total and specific lipids found in the cardiovascular and associated tissues of these experimental animals. The marine oils, i.e. menhaden oil fractions, have been found to promote a reduction in liver lipid and a series of changes in the distribution of specific kinds of lipids as well as a reduction in plasma cholesterol levels of the rat. Similar changes were observed in rats fed whole fish products, but not in rats fed the more common dietary fats. Considerable effort is now being made to establish the significance of the metabolic shifts occurring in tissue lipids following supplementation with marine oil fractions.

Some of the more unique characteristics of the whole body oils from tuna, menhaden, salmon, ocean perch, herring, mullet, and cod are their relatively high contents of the "linolenic family" of acids, their high degree of total unsaturation and their contents of significant amounts of a wide range of fatty acids having 14 to 22 carbons and 0 to 6 double bonds. However, this is more of a quantitative than a qualitative distinction for the marine oils. There is a considerable gap in our knowledge as to the metabolic function of most of the lipids found in marine oils and other tissue lipids. The availability of information concerning the function of essential fatty acids is meager and speculations as to the obligatory cholesterol depressant activities of these acids and their possible role in electron transport in the cytochromes have since proven to be misconceptions. The transport of these lipids in blood and vascular tissues has received considerable attention in recent years because of the apparent importance of this phenomenon to the problem of blood-vascular diseases. However, the distribution of specific fatty acids in specific esters which varies according to the tissues examined and the distribution of lecithins, cephalins, plasmalogens in the vital organs of the body suggest that such lipids and lipid complexes must play a very important role in the vital activities of all living tissues.

Note: (1) This contract research is supervised by the Technological Laboratory, U. S. Bureau of Commercial Fisheries, Seattle, Wash. Findings are based on unpublished limited experimental data.

(2) See Commercial Fisheries Review, March 1962 p. 16.



Fish Protein Concentrate

NATIONAL ACADEMY OF SCIENCES TO STUDY FISH PROTEIN CONCENTRATE:

Secretary of the Interior Stewart L. Udall was advised by Dr. Detlev W. Bronk, President of the National Academy of Sciences, the latter part of June 1962 that the Academy will establish a committee to study fish protein concentrate (FPC). This study was requested recently by Secretary Udall.

Among other subjects, the study will be a determination of whether a wholesome, safe, and nutritious fish protein concentrate product can be made from whole fish; and whether there is a demonstrable need, either nutritionally or economically, for an inexpensive animal protein food supplement among the people comprising the lower income groups of the United States.

In requesting the National Academy of Sciences to make the study, Secretary Udall informed Dr. Bronk:

"The Department of Interior, recognizing the potential value of FPC to the domestic fishing industry and the global need for a cheap animal-protein supplement also considers the use of whole fish to be of vital importance."

The Food and Drug Administration, he pointed out, has held that the fish protein concentrate cannot be marketed in the United States inasmuch as that agency has ruled that it contains portions of the fish not normally regarded as acceptable for human food.

Processes tested and examined by U.S. Bureau of Commercial Fisheries scientists here and abroad reduce the whole fish to a "chemically-cleaned powder ideally suitable as a low-cost protein supplement so desperately needed by a majority of the world's population," Secretary Udall said.

The Fish and Wildlife Service's Bureau of Commercial Fisheries recently began a research project on fish protein concentrate. The goal is to develop new or improved methods of manufacture that would result in "a product of highest quality in terms of keeping qualities, acceptance, cost, nutritive value, and flexibility for world-wide incorporation in diets of protein-hungry peoples of the world," Secretary Udall said.

Secretary Udall added that the manufacture and utilization of fish protein concentrate covers many scientific areas such as chemistry, pediatrics, food technology, nutrition, engineering, economics, and other disciplines. Bureau of Commercial Fisheries scientists at the College Park, Md., Technological Laboratory have, by conducting a global survey, gathered and coordinated nearly all the information available on FPC studies around the world.

"Increasing concern over the world food deficit has brought into international prominence the urgent need for the technological development of cheap, stable, and nutritious fish protein concentrate suitable for world-wide dietary supplementation," Secretary Udall said. "The Department of the Interior programs now under way are designed to fulfill our Nation's responsibility in meeting this need."



Fish Sticks

NORWEGIAN SUBSIDIARY PLANT IN UNITED STATES TO DOUBLE OUTPUT:

The Norwegian firm with a plant in Mobile, Ala., plans to double the output of fish sticks. This will be accomplished by working two shifts a day, instead of one. At present, the frozen fish stick production of the Mobile plant is about 1,500 tons a year. (News of Norway, May 31, 1962.)



Great Lakes Fishery Investigations

WESTERN LAKE SUPERIOR FISHERY SURVEY FOR 1962 SEASON BEGINS:

M/V "Siscowet" Cruise 1 (May 9-29, 1962): The western Lake Superior survey for the 1962 season by the U. S. Bureau of Commercial Fisheries research Siscowet began May 9.

Studies during the cruise were devoted almost entirely to the distribution and abundance of native and hatchery-reared lake trout in the Apostle Islands region. Semi-balloon trawls were fished at depths of 15 to 44 fathoms, and a standard gang of experimental gill nets (1- to 5-inch mesh by $\frac{1}{2}$ -inch intervals) was fished at 25 fathoms.

A total of 124 young lake trout were taken during the cruise (6 in gill nets and the remainder in trawls), of which 117 were fin-clipped. Of these hatchery-reared fish, 72 were from the 1961 Bayfield shore plant, 30 from the 1960 shore plant, and 6 from the 1959 boat plant. All of the young lake trout were returned alive to the water except a few which were preserved for food studies.

Most of the lake trout, and other species (small numbers of smelt, chubs, trout-perch, and sticklebacks) were taken at depths below 25 fathoms. Most of the trawl catches included yearling coregonines (a rarity in former years), but there was a complete absence of alewives, which in the fall of 1961 were taken in nearly every tow.

In conjunction with the trawling operations, a $\frac{1}{2}$ -meter plankton net towed from 1 to 60 feet below the surface captured about 25 larval fish, most of which were smelt.

Surface water temperatures ranged from 34.2° F. to 43.1° F., and were within that range at all depths.

Note: See Commercial Fisheries Review, June 1962 p. 17.

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LAKE ERIE FISH POPULATION SURVEY:

The spring series of 3-day trawl operations (two 10-minute tows at each of three depths, during the morning, afternoon, and evening) were carried out in May 1962 at stations 49 (Bono) and 4 (East Harbor). Bottom topography in the medium offshore depth (15 feet) at the Bono station interfered with trawling and strong northeast winds repeatedly interrupted the schedule at East Harbor.

The catches at Bono, which were slightly greater than at East Harbor, averaged about 400 fish per tow. Yellow perch in about equal numbers from the 1959 and 1961 year-classes made up the bulk of



Yellow perch

the total catch. Sheephead, trout-perch, spot-tail shiners, and emerald shiners were also taken in fair numbers. Alewives, gizzard shad, and white bass were conspicuously absent. At East Harbor, the principal portion of the catch of approximately 325 fish per tow was divided about equally among yellow perch, spot-tail shiners, and sheephead. Yellow perch predominated in trawl catches earlier in May. Channel catfish and bullheads were taken consistently throughout the series. Twelve yearling yellow pike or walleyes averaging about 9.3 inches long were taken at East Harbor, and six at Bono.

During one 24-hour period at each of the two index trawling stations, water samples were taken for chemical analysis, and quarter-meter plankton nets were towed at the surface, midwater, and bottom. Catches in the plankton nets ranged from a few to upward of 1,000 fry per 10-minute tow. The midwater hauls yielded the most fry, and slightly larger numbers were taken at night than during the day.

Surface water temperature increased steadily from about 58° F. at the beginning of the month to about 70° F. at the end.

Sampling of the commercial catch, which began in April, was completed in early May. Approximately 2,300 scale samples were collected. Many commercial fishermen curtailed operations because of the low market price of yellow perch, excessive numbers of undersize fish, and a scarcity of the more desirable fish species.

Emphasis in June 1962 was on the evaluation of spawning success and the subsequent survival of newly hatched fish in Lake Erie. Tows with half-meter and meter plankton nets yielded from several hundred to as many as 5,000 larval fish per 10-minute haul. By late June most fish of the 1962 year-class were large enough to be caught in regular bottom trawls equipped with $\frac{1}{4}$ -inch-mesh cod ends. As expected, young-of-the-year yellow perch predominated; varying numbers

of white bass, gizzard shad, spot-tail shiners, smelt, and yellow pike (walleyes) also were caught.

The early indications of successful reproduction of yellow pike in 1962 were especially encouraging. More than 200 fingerlings were captured in trawl tows, a much higher number than taken in the corresponding period of 1959 (the year of the last successful hatch). The young yellow pike were widely distributed. Some were caught at each station visited.

Trawl catches of the larger fish consisted mainly of yellow perch, sheephead, channel catfish, and spot-tail shiners. Yellow perch of all age classes were increasing in weight and appeared to be in a healthy condition. Yearling perch continued to feed on plankton, whereas older perch had changed over to a diet of small fish.

The bottom sediments of the central basin were investigated for two weeks in mid-June to determine the oxygen demand of the sediments and its effects on the water in contact with the bottom materials. Samples were taken by the Musky II at 53 stations between the Bass Islands and Lorain, Ohio (most were south of the international boundary). Data were obtained on the dissolved oxygen, pH, alkalinity, and turbidity of the lake water at various depths at each station, in addition to uptake of dissolved oxygen by mud samples in continual suspension as well as over packed mud cores. Dry and ash weights of the sediment were obtained for each station.

Water analyses and tows with bottom trawls were carried out at two former stations established by the Cisco in the central basin. These locations were selected because of the dissolved oxygen deficiency observed in previous years. The stations were to be checked periodically throughout the summer to determine the relationship, if any, between the low dissolved oxygen in deep water and the identity and number of fish and other forms of aquatic life. The use of a midwater trawl also was to be explored.

Surface water temperatures in the western end of Lake Erie averaged 70° F. at the beginning of the month and increased to about 75° F. by late June. Water temperatures in Sandusky Bay usually ranged several degrees warmer than in the main lake. In general, water temperatures were considerably warmer than for the same period in 1960 and

1961, but compared favorably with temperatures in 1959.

* * * * *

DEPTH DISTRIBUTION OF CHUBS AND ASSOCIATED SPECIES IN LAKE MICHIGAN STUDIED:

M/V "Cisco" Cruise 2 (May 15-19, 1962): One of the primary objectives of cruise 2 in Lake Michigan, off Saugatuck, Mich., was to determine the bathymetric or depth distribution of chubs (*Coregonus* or *Leucichthys* spp.) and associated fish species before thermal stratification developed. The cruise was made by the U. S. Bureau of Commercial Fisheries research vessel *Cisco*. Surface water had warmed somewhat near shore, but not enough to establish a definite discontinuity layer. The water was homothermous at about 37.4° F. in all areas 8 miles offshore, at depths of 35 fathoms or more. Bottom trawl hauls were made at 7, 10, 12, 15, 20, 25, 30, 35, 40, and 50 fathoms. Chubs (practically all *C. hoyi*) were taken at all depths except 7 and 10 fathoms, but catches were small. Alewives, the most common species taken, were caught at all depths, but were most abundant inside of 20 fathoms. Yellow perch were common out to 15 fathoms. Smelt were rather abundant at 12 and 15 fathoms; only a few were taken at other depths. Slimy sculpins were found at all depths, but were taken in greatest numbers in the 25- to 40-fathom range; deep-water sculpins were caught in only the three deepest tows, and were abundant only at 50 fathoms. Spot-tail shiners were taken as deep as 15 fathoms, trout-perch as deep as 20 fathoms, and log-perch as deep as 12 fathoms.

Gill nets which were set at 84 fathoms in an area where the *Cisco* took large numbers of *C. kiyi* in 1954 yielded only a few fish of that species. Surprisingly, about 25 percent of the *C. hoyi* at this depth appeared to be in spawning condition, at least 2 months after their regular spawning time. The *C. hoyi* caught in shallower water (50 fathoms and less) seemed to have spawned sometime ago.

Vertical distribution at midwater levels was investigated by the use of trawls, gill nets set obliquely from top to bottom, small-mesh gill nets suspended beneath the surface, and $\frac{1}{2}$ -meter large-mesh plankton nets. Alewives appeared to be rather abundant in mid-levels out to a depth of 35 fathoms. A few smelt were caught in the midwater trawls, and several yellow perch were taken near

the surface in an oblique gill net set in 13 fathoms. Only 4 *C. hoyi* were taken mid-water in the trawls, but 94 were caught off the bottom in an oblique $1\frac{1}{4}$ -inch-mesh gill-net set in 25 fathoms. Some of the *C. hoyi* (which were mostly about 7.5 inches long) were caught within 20 feet of the surface. Several coregonine fry were caught in mid-water over 40-, 50-, and 84-fathom bottoms; they did not seem to be concentrated at any midlevel, but were scattered from near-surface to near-bottom in the homothermous water in which they were found. Tows in water from 7 to 35 fathoms deep failed to produce fry.



A graduate student from the University of Michigan was aboard the vessel for 3 days to collect blood samples from chubs (taken alive from gill nets and trawls) for electrophoresis and serological studies. These studies are designed to develop methods to aid in the identification of the various chub species.

M/V "Cisco" Cruise 1 (April 24-May 8): During cruise 1 the *Cisco* was under contract to the U. S. Public Health Service. The Bureau furnished the *Cisco*'s regular vessel crew and two biologists from the Ann Arbor Laboratory, and the Public Health Service supplied a scientific staff of three. Hydrographic and bacteriological information was collected at 36 widely-scattered locations in southern and central Lake Michigan.

* * * * *

LAKE MICHIGAN FISHERY SURVEY CONTINUED:

M/V "Cisco" Cruise 4 (June 26-July 9, 1962): Rather pronounced thermal stratification was observed in all areas visited in Lake Michigan, off Saugatuck and Grand Haven, Mich., as far out as midlake during this cruise. Surface water temperatures were approximately 61° to 64° F. Early in the cruise, the temperature gradient or thermocline touched bottom at about 6 fathoms. Drags with a bottom trawl equipped with a small-mesh cod end showed a rapid change in depth distribution of bottom fish near this depth. A 10-minute tow

at 5 fathoms took no chubs (*Coregonus hoyi*) or smelt, 586 alewives, 144 yellow perch, and 2 trout-perch; a similar tow at 7 fathoms, where the bottom water temperature was colder, caught 187 chubs, 198 smelt, 2 alewives, 201 perch, and 196 trout-perch. At 10 fathoms the catch was 395 chubs, 23 smelt, no alewives, 223 perch, and 2 slimy sculpins. A few perch and smelt were caught at 12 fathoms, but in tows at 15, 20, 25, 30, 35, and 40 fathoms the catches were almost entirely chubs except for moderate numbers of slimy sculpins.

Catches from a small-mesh gill net set obliquely from top to bottom in 26 fathoms, and from another suspended 7 fathoms beneath the surface at the same station, indicated that considerable numbers of chubs occupied midlevels up to the top of the temperature gradient (about 5 fathoms below the surface), and that fair numbers of alewives were above that point, but few were in or below it. The chubs, most of which were 7 to 8 inches long, were most abundant at the 5- to 10-fathom level and near the bottom. Small trawls towed midwater at night off Grand Haven took only a few alewives and chubs. Some of the alewives were apparently yearlings, but no yearling chubs were caught.

Half-meter plankton nets of rather large mesh (No. 32 grit cloth) were towed at various levels from the surface to near the bottom at 5-fathom depth intervals, over bottoms from 5 to 45 fathoms deep off Saugatuck, and at 5 to 30 fathoms off Grand Haven. Fish fry, believed to be alewives and smelt, were fairly numerous a few meters below the surface over all bottoms out to 20 fathoms, but not beyond. Coregonine fry were caught in small numbers in the temperature gradient and slightly below it, over bottom depths ranging from 25 to 40 fathoms.

Of 175 chubs caught in a gill net set on the bottom at 84 fathoms, 11 females were ripe and 13 gravid, although the usual spawning season for that species, at least in shallower water, is January to March.

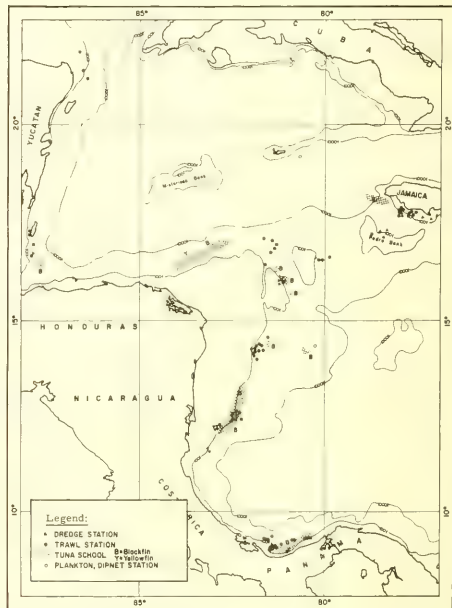
The collection of blood from live chubs for an electrophoresis study was carried out by a University of Michigan graduate student. This study was started on cruise 2.



Gulf Exploratory Fishery Program

WESTERN CARIBBEAN SEA POTENTIALLY-VALUABLE SPECIES ASSESSED:

M/V "Oregon" Cruise 78: To assess the sea bottom for potentially-valuable species of fish and shellfish in the outer Continental Shelf and upper slope zones in the western Caribbean Sea was the first objective of the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon on cruise 78. The second objective of the Oregon (which returned to port on June 15) was to continue the seasonal coverage started with its cruise 46 in August-September 1957.



Shows the station pattern for cruise 78 of the M/V Oregon (May 8-June 15, 1962).

Basic exploratory gear was a 40-foot shrimp trawl. Length of tows varied with bottom conditions. In areas where bottom conditions were too rough for shrimp trawl sampling, a 5-foot tumbler dredge was used. A total of 60 trawling and 13 dredging stations were completed in the survey depths of 50 to 500 fathoms. In addition, 6 trawling stations and 8 dredging stations were completed at lesser depths. Specific areas of

deep-water trawling coverage were off Panama, Nicaragua, Honduras, British Honduras, and to the north and west of Pedro Bank.

Royal-red shrimp (*Hymenopenaeus robustus*) were present in the majority of drags in depths of 200 to 400 fathoms. Only small concentrations were found, chiefly in 250-275 fathoms off Nicaragua, which yielded catches of approximately 20 pounds (heads on) per 1- to 2-hour tow. *Peneopsis megalops* had a similar distribution and were taken at rates of up to 35 pounds per tow. Large scarlet prawns (*Plesiopenaeus edwardsianus*) were found throughout the 250- to 500-fathom depths but catches were small (1 to 15 pounds). Deep-water lobster (*Nephrops binghami*) were present in the 125- to 300-fathom range, which ranged from 4 to 40 count (heads on) per pound. Attempts to simulate commercial-scale trawling with larger trawls were not feasible because of heavy sea conditions. Several catches of 10 to 30 pounds were made with the exploratory gear, chiefly in depths of about 200 fathoms off Nicaragua and British Honduras.

Indications of good trawling grounds for yellow-eye snapper (*Lutjanus vivanus*) were located over an extensive area along Nicaragua in depths of 70 to 110 fathoms. Catches with exploratory gear produced from 45 to 120 pounds of 13-inch to 26-inch snapper, with the best catches from 80-85 fathoms. Depth-recorder tracings from off Little Corn Island to off Cape Gracias a Dios indicated several hundreds of square miles of smooth bottom in these ranges.

Numerous small schools of blackfin tuna were observed throughout the survey area, and 24 trolling captures yielded blackfin ranging from 1½ to 14 pounds. Schools were greatly concentrated at the edges of the shelf, particularly off Nicaragua. Two large schools of yellowfin were observed off Punta Patuca, Honduras. Three trolling captures from these schools yielded yellowfin ranging from 9 to 25 pounds.

A two-day program of ichthyological collecting was conducted on the south coast of Jamaica in cooperation with the Los Angeles County Museum and the Institute of Jamaica. Eleven trawling and dredging stations and one hand-line station were occupied on the Continental Shelf between 8 and 23 fathoms. Of commercial interest was the capture of Caribbean brown shrimp (*Penaeus braziliensis*) at rates of up to 104 individuals per

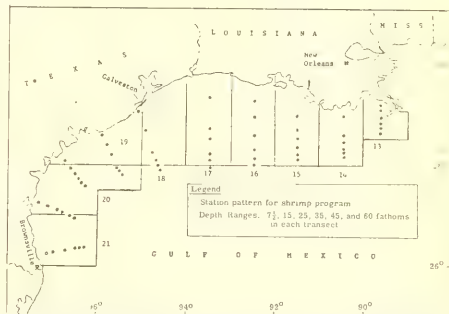
15 minute drag. *P. braziliensis* were present in 5 drags in 14 to 22 fathoms between Minho and Black Rivers. Judicious selection of trawling bottom was necessary because of the broken topography.



Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Belle of Texas" Cruise BT-20 and "Miss Angela" Cruise MA-14: Only light catches of shrimp were made by the research vessels Belle of Texas and the Miss Angela in May 1962. Both of the vessels are operated by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries in studying the distribution of shrimp in the Gulf of Mexico.



Shows the station pattern for cruise BT-20 of the M/V Belle of Texas and cruise MA-14 of the M/V Miss Angela in May 1962.

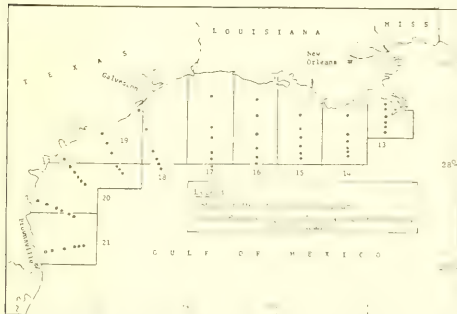
A total of 8 statistical areas were covered. Coverage of two statistical areas was not completed because of a breakdown of the M/V Miss Angela. One 3-hour tow was made in each of 3 depth ranges in each area. A 45-foot shrimp trawl was used. Most of the catches consisted of brown shrimp with traces of white and pink shrimp. The largest single catch was 18 pounds of heads-on shrimp (all brown) of 20-40 count (heads-off) size in 20-40 fathoms in area 19. This same area yielded only 13 pounds (heads-on) brown, white, and pink shrimp in 0-20 fathoms, and only 1 pound (heads-on) of brown shrimp in 40-60 fathoms.

M/V "Belle of Texas" Cruise BT-21 (June 18-23, 1962): Small catches of mostly brown

shrimp were made by the M/V Belle of Texas.

Four statistical areas were covered and a 45-foot shrimp trawl was used. One 3-hour tow was made in each of the 3 depth ranges in each area. The largest single catch was 15 pounds (heads-on) of 26-30 count heads-off brown shrimp made in the depth range up to 20 fathoms in area 18. The same area yielded 3 pounds (heads-on) of 12-15 count (heads-off) shrimp in the 20-40 fathom range, and 1 pound (heads-on) of the same size in the 40-60 fathom depth.

Each tow in area 19 yielded 12-15 count (heads-off) brown shrimp; 3 pounds (heads-on) in the depth range up to 20 fathoms, 4 pounds (heads-on) in the 20-40 fathom range, and 6 pounds (heads-on) in 40-60 fathom depths.

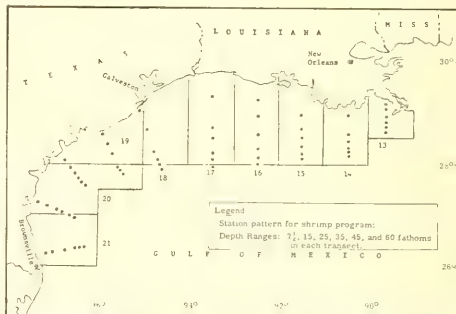


Shows station pattern for cruise BT-21 of the M/V Belle of Texas, June 18-23, 1962.

Concentrations of small brown shrimp counting less than 68 heads-off to the pound were found at $7\frac{1}{2}$ fathoms in areas 20 (10 pounds, heads-on) and 21 (7 pounds, heads-on). Some 15-20 count (heads-off) white shrimp and 31-40 count (heads-off) pink also were caught in the 0-20 fathom depth range in area 20. Large brown shrimp of 12-15 count (heads-off) were taken in area 20-5 pounds (heads-on) in the 20-40 fathom range, and 12 pounds (heads-on) in the 40-60 fathom range.

Area 21 also yielded large 12-15 count (heads-off) brown shrimp; 10 (heads-on) pounds in the 20-40 fathom range and 1 pound (heads-on) in the 40-60 fathom range.

M/V "Belle of Texas" Cruise BT-22 (June 25-July 1, 1962): Good catches of 12-15 count heads-off brown shrimp were made in the 20-40 and 40-60 fathom depth ranges off the Louisiana coast by the Belle of Texas between June 25 and July 1, 1962.



Shows the station pattern for cruise BT-22 of the M/V Belle of Texas, June 25-July 1, 1962.

A total of 5 statistical areas were covered. One 3-hour tow was made in each of 3 depth ranges in each area. A 45-foot shrimp trawl was used. All of the catches consisted of brown shrimp except in area 13 where one tow in the up to 20-fathom range yielded 2 pounds (heads-on) of 12-15 count (heads-off) white shrimp, and only 4 pounds (heads-on) of brown shrimp of the same size. The 20-40 fathom range in this area produced 9 pounds (heads-on) of 15-20 count (heads-off) brown shrimp.

The largest catch was in area 15 which yielded 25 pounds (heads-on) of 12-15 count brown shrimp in the 40-60 fathom depth range, 13 pounds (heads-on) of the same size in the 20-40 fathom range, and 24 pounds (heads-on) of 41-50 count (heads-off) in the 0-20 fathom range. The next largest catch of 12-15 count shrimp was in area 14 which yielded 26 pounds (heads-on) in the 20-40 fathom depth range, and 4 pounds (heads-on) in the 40-60 fathom range. The up to 20-fathom range accounted for 2 pounds of 41-50 count shrimp.

SHRIMP MARKING STUDY IN GULF OF MEXICO:

Small brown shrimp were stained during a cruise off the Louisiana and Texas coasts by the research vessel M/V George M. Bowlers operated by the Galveston Biological

Laboratory of the U. S. Bureau of Commercial Fisheries. The vessel returned to Galveston on July 19, 1962. The purpose of the marking study is to determine the movement, growth, and mortality of shrimp stocks in those areas.

Shrimp caught and released off the Louisiana coast were marked with green stain; those off the Texas coast were marked with a blue stain.

The assistance and cooperation of fishermen and packing house personnel in detecting and returning marked shrimp is needed if the study is to be successful. A \$2.00 reward will be paid by Bureau of Commercial Fisheries port agents or samplers for each marked shrimp returned, together with information on the area and depth of recapture.

A similar mark-recapture study with white shrimp off the Louisiana coast was planned for August 1962. (Cruise 40, July 6-19, 1962.)



Hawaii

GOOD RESULTS WITH TILAPIA AS LIVE BAIT FOR SKIPJACK TUNA:

Tilapia from the State of Hawaii's baitfish hatchery in Honolulu have proven very successful as live bait for skipjack tuna (aku), according to the Hawaii Area Director of the U. S. Bureau of Commercial Fisheries. The venture was described as the first full-scale use of tilapia for that purpose. Early this summer, the sampan Broadbill, chartered by the Bureau's Biological Laboratory in Honolulu, using \$35 worth of tilapia from the State's hatchery, caught tuna worth about \$450.



Tilapia (*Tilapia mossambica*)

The fishery research biologist in charge of a cooperative Federal-State program of tuna gill-net fishing experiments aboard the Broadbill, reported that, in his opinion, the hatchery-reared tilapia show definite promise as skipjack tuna bait. He found in recent

fishing around the island of Kauai that schools of both large (25-30 pound) and small (2-4 pound) skipjack tuna responded well to chumming with tilapia averaging 1-2 inches long. The biologist expects that as more experience with the new bait is gained, fishermen will find that using a different vessel speed while fishing and making other modifications of techniques now used with natural bait will further improve the efficiency of tilapia as bait for skipjack.

According to the Director of the State Division of Fish and Game, the tilapia hatchery and rearing setup was getting into quantity production early this summer. It was believed that moderate quantities of baitfish could be supplied intermittently during the rest of the 1962 summer skipjack fishing season. By next year's fishing season, the State of Hawaii's baitfish hatchery is expected to be in a position to contribute importantly to the solution of the Oahu skipjack fleet's chronic bait shortage.



Industrial Fishery Products

U. S. PRODUCTION, JUNE 1962:

Preliminary data on U. S. production of fish meal, oil, and solubles for June 1962 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the following table.

U. S. Production ^{1/} of Fish Meal, Oil, and Solubles, June 1962 (Preliminary) with Comparisons				
Region	Meal Short Tons	Oil 1,000 Gallons	Solubles (Short Tons)	Homogenized
June 1962:				
East & Gulf Coasts .	54,040	6,258	20,521	3/1,675
West Coast 2/	2,131	62	1,734	-
Total	56,171	6,320	22,255	1,675
Jan.-June 1962 Tot.	112,449	11,311	43,487	5,370
Jan.-June 1961 Tot.	102,502	11,866	36,552	3,648
^{1/} Does not include crab meal, shrimp meal, and liver oils.				
^{2/} Includes Hawaii, American Samoa, and Puerto Rico.				
^{3/} Includes condensed fish.				

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MAJOR INDICATORS FOR U. S. SUPPLY, MAY 1962:

For the first five months of 1962, fish meal, solubles, and fish oil production was down as compared with the same period of 1961.

Major Indicators for U. S. Supply of Fish Meal, Solubles, and Oil, May 1962					
Item and Period	1962	1961	1960	1959	1958
(Short Tons)					
Fish Meal:					
Production 1/:					
July	-	62,586	55,696	52,132	43,467
June	-	53,162	44,293	52,006	30,949
May	32,500	32,922	17,194	25,312	17,433
Jan.-Apr.	13,604	13,735	12,222	14,155	11,661
Jan.-Dec. prelim. total 2/	-	289,039	257,968	275,396	216,510
Jan.-Dec. final tot.	-	311,265	290,137	306,551	248,140
Imports:					
July	-	18,710	13,131	4,303	13,546
June	-	19,317	11,178	10,836	9,091
May	-	24,753	9,496	16,329	8,949
April	26,390	19,060	10,396	17,654	11,758
Jan.-Mar.	62,774	44,333	35,304	55,882	26,148
Jan.-Dec. totals	-	217,845	131,561	132,955	100,352
(Short Tons)					
Fish Solubles:					
Production 3/:					
July	-	22,589	18,876	30,163	21,892
June	-	17,772	20,735	26,756	16,561
May	13,100	13,629	7,370	18,639	9,351
Jan.-Apr.	8,875	8,799	8,841	13,493	7,518
Jan.-Dec. totals	-	112,241	98,929	165,359	130,177
Imports:					
July	-	708	96	4,938	607
June	-	207	149	202	137
May	-	283	59	4,874	1,405
April	323	220	134	1,622	45
Jan.-Mar.	2,830	509	2,176	1,767	706
Jan.-Dec. totals	-	6,739	3,174	26,630	14,567
(1,000 Gallons)					
Fish Body Oils:					
Production:					
July	-	7,553	5,337	4,143	3,792
June	-	6,296	4,672	4,826	3,267
May	3,600	4,367	1,768	2,604	2,166
Jan.-Apr. 4/	838	602	416	580	379
total	-	33,471	26,690	24,418	21,625
Jan.-Dec. final tot.	-	34,409	27,826	24,945	21,977
Exports:					
July	-	589	5,414	3,770	791
June	-	280	208	1,514	242
May	-	426	324	1,455	293
April	1,369	980	761	1,116	254
Jan.-Mar.	5,510	4,874	3,874	2,497	3,527
Jan.-Dec. totals	-	16,331	19,155	19,264	12,539

1/Does not include crab meat, shrimp, and misc. meals.

2/Preliminary data computed from monthly data. Fish meal production currently comprised 86 percent of the annual total for 1958, 90 percent for 1959, 89 percent for 1960, and 92 percent for 1961.

3/Includes homogenized fish.

4/Preliminary data computed from monthly data. Represents over 95 percent of the total production.

Note: Data for 1962 and 1961 are preliminary.

* * * * *

U. S. PRODUCTION, APRIL 1962:

During April 1962, United States fish meal and scrap production was up 200 tons or 3 percent and marine-animal oil yield was up 206,300 gallons or 46 percent as compared with the same month in 1961.

Menhaden accounted for 54 percent of the April 1962 meal total. Oil from menhaden comprised 81 percent of that month's oil production.



Mending a menhaden purse-seine net requires highly specialized skill.

There were 89 tons more fish solubles produced in April 1962 than in the same month of 1961. The production of homogenized condensed fish was up 700 tons.

U. S. Production of Fish Meal, Oil, and Solubles, April 1962 with Comparisons					
Product	April 1962	April 1961	Jan.-Apr. 1961	April 1961	Total 1961
(Short Tons)					
Fish Meal and Scrap:					
Herring, Alaska	-	-	-	-	3,810
Menhaden 2/	3,402	3,612	3,609	4,143	247,531
Sardine, Pacific	-	-	-	-	2,518
Tuna and mackerel	1,771	1,638	6,293	6,490	21,343
Unclassified	1,138	863	3,011	3,024	16,215
Total fish meal and scrap	6,311	6,112	13,494	13,657	211,397
Shellfish and marine animal meal and scrap 3/	37	37	37	37	19,928
Grand total meal and scrap	6,348	6,149	13,531	13,694	231,325
Fish solubles:					
Menhaden 2/	2,716	2,627	7,595	8,103	100,351
Other	1,050	338	1,295	616	11,995
Grand total fish solubles	3,766	3,005	8,890	8,719	112,346
(Gallons)					
Oil, body:					
Herring, Alaska	-	-	-	-	727,517
Menhaden 2/	530,658	360,630	555,626	370,680	31,355,570
Sardine, Pacific	-	-	-	-	86,167
Tuna and mackerel	55,820	43,533	139,514	144,281	762,509
Other (including whale)	85,700	41,686	103,476	105,105	1,477,042
Total oil	672,178	445,849	837,577	620,146	34,408,805

1/Preliminary data.
2/Includes a small quantity produced from dwarf herring.
3/Not available on a monthly basis.

During the first four months of 1962, meal and scrap production was slightly below that for the same period of 1961; the marine-animal oil yield was up 217,800 gallons.

* * * * *

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, April 1962: Based on domestic production and imports, the United States available supply of fish meal for the first 4 months of 1962 was 25,700 tons or 33 percent greater than during the same period of 1961. Domestic production was slightly less, but imports were 25,800 tons greater than in the 4-months period of 1961. Peru continued to lead other countries with shipments of 67,700 tons during the first 4 months of 1962—22,400 tons above the imports in the same period of 1961.

The total United States supply of fish meal in calendar year 1961 of 529,100 tons exceeded the peak year 1959 when the quantity amounted to almost 440,000 tons.

The United States supply of fish solubles (including homogenized fish) during January-April 1962 was 2,500 tons more than during the same period in 1961. Solubles and homogenized fish of 8,900 tons manufactured from domestically-caught fish made up 74 percent of the 4 months supply in 1962.

U. S. Supply of Fish Meal and Solubles, January-April 1961-62 and Total for 1961			
Item	January-April		Total
	1/1962	1961	1961
..... (Short Tons)			
Fish Meal and Scrap:			
Domestic production:			
Menhaden	3,609	4,143	247,551
Tuna and mackerel	6,295	6,490	21,243
Herring, Alaska	-	-	3,810
Other	3,700	3,024	38,661
Total production	13,604	13,657	311,265
Imports:			
Canada	14,748	9,879	38,218
Peru	67,725	45,324	151,439
Chile	2,039	3,582	12,074
Angola	-	1,433	1,543
So. Africa Republic	4,501	3,036	13,026
Other Countries	151	139	1,545
Total imports	89,164	63,393	217,845
Available fish meal supply ..	102,768	77,050	529,110
Fish Solubles:			
Domestic production 2/	8,875	8,799	112,241
Imports:			
Canada	600	465	1,001
So. Africa Republic	101	180	1,351
Other Countries	2,452	84	4,387
Total imports	3,153	729	6,739
Available fish solubles supply ..	12,028	9,528	118,980

1/ Preliminary.
2/ 50-percent solids. Includes production of homogenized condensed fish.



Maine Sardines

CANNED STOCKS, JUNE 1, 1962:

Distributors' stocks of Maine sardines totaled only 99,000 actual cases on June 1, 1962--116,000 cases or 54 percent less than the 215,000 cases on hand at the same time in 1961, according to estimates made by the U. S. Bureau of the Census.

Canners' stocks on June 1, 1962, totaled only 50,000 standard cases (100 $\frac{3}{4}$ -oz. cans), a decline of 244,000 cases (83.0 percent) as



compared with June 1, 1961. This reflected one of the shortest packs in recent years for 1961.

The Maine Legislature authorized a 1962 season of 13 months--December 2, 1961-January 1, 1963. The 1961 season was from April 15 to December 1, the usual legal packing season for canned sardines in Maine. The pack December 2-June 1 totaled 45,000 cases, and by June 9 the pack reached 163,976 cases. Through June 30, 1962, this season's pack totaled 452,519 standard cases. During April 15-June 30, 1961, a total of 53,844 cases were packed. During April 15-June 30, 1960, a total of 337,000 cases were packed.

As is evident, the bulk of the 1962 season pack to date was caught in June. Most of the fish were caught in the Boothbay-Portland (western) area. The catch was very disappointing in the middle and eastern areas of Maine.

On April 15, 1962, the date on which the packing season started in former years, carryover stocks totaled about 33,000 cases. One year earlier, on April 15, 1961, carryover stocks totaled 457,000 cases.



Massachusetts

FISHERY LANDINGS BY GEAR AND AREA, 1961:

Landings by fishing craft of all sizes at Boston, Gloucester, New Bedford, and other Massachusetts ports during 1961 totaled nearly 432 million pounds--a 3-percent decrease compared with the amount landed the previous year. Haddock was the leading species with 114.4 million pounds, followed by whiting (71.6 million pounds), and flounders (59 million pounds).

Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, June 1, 1962, with Comparisons 1/									
Type	Unit	1961/62 Season				1960/61 Season			
		6/1/62	4/1/62	1/1/62	11/1/61	7/1/61	6/1/61	4/1/61	1/1/61
Distributors	1,000 actual cases	99	148	193	202	208	215	267	233
Canners	1,000 std. cases 2/	50	45	144	221	201	294	506	1,029
									277
									1,258
									359
									235

1/ Table represents marketing season from November 1-October 31.

2/ 100 $\frac{3}{4}$ -oz. cans equal one standard case.

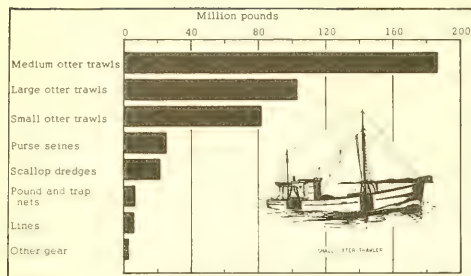


Fig. 1 - Massachusetts landings--catch by gear, 1961.

Fishing grounds off the New England coast yielded 359 million pounds or 83 percent of the entire landings. About 16 percent was taken on grounds off Nova Scotia, while the remaining 1 percent came from the Gulf of St. Lawrence, the Grand Banks, and from areas off the Middle Atlantic States.

Mississippi

FISHERY LANDINGS, 1961:

Landings of fish and shellfish at Mississippi ports during 1961 totaled 391.9 million pounds valued at \$7.6 million ex-vessel--a gain of 25 percent in volume and less than 1 percent in value. Fish for industrial use (378.1 million pounds) comprised 96 percent of the year's total catch.

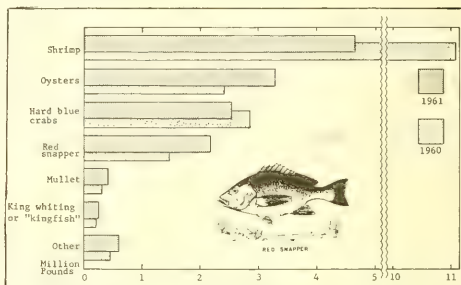


Fig. 1 - Landings of certain edible fish and shellfish, 1961-1960.

Total food finfish landings (3.4 million pounds valued at \$660,000) were 33 percent above the previous year primarily because of greater landings of red snapper. An increase in the catch of spotted sea trout taken by trammel nets also contributed to the year's increased production.

The 1961 record catch of menhaden (301.3 million pounds valued at \$3.4 million) was up 38 percent in quantity and 55 percent in value as compared with 1960. The increased value was the result of an improved market for fish meal. The menhaden oil market remained at the previous year's low level.

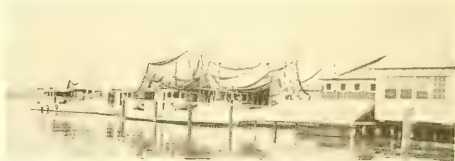


Fig. 2 - Crab processing plant in Mississippi on the Biloxi Back Bay.

A total of 712 fishing craft was required to capture the 432 million pounds of fish and shellfish taken in 1961. Of that number, 434 craft using otter trawls caught 86 percent of the total landings. Purse seines accounted for 6 percent, scallop dredges took 5 percent, and the remainder was taken on lines, in pound and trap nets, by harpoons, or with gill nets.



The worst shrimp year since the early 1900's was principally responsible for the sharp decreases in shellfish landings. Compared with 1960, the catch (4.6 million pounds heads-on, valued at \$1.4 million) was down 58 percent in quantity and 53 percent in value. As the shrimp fishery uses the largest number of people in the fishing industry, the drop in landings affected most of the industry in the State.

A 36-percent increase in oyster landings in 1961 was the only bright spot in the State's 1961 shellfish fisheries. The market was good due to strong demand.



Fig. 3 - Picking blue crabs in a crab plant in Mississippi.

Hard blue crab landings of 2.5 million pounds with a value of \$143,000 were down 11 percent in quantity and 15 percent in value from 1960.

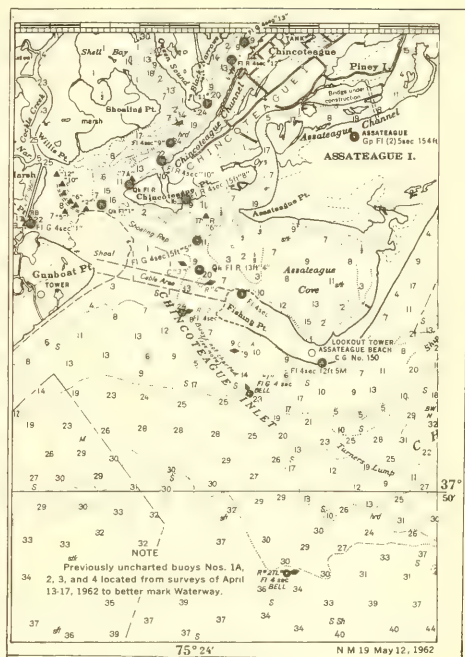


Navigation

MARCH STORMS ROUGHED-UP OCEAN BOTTOM AND ALTERED NAVIGATION CHANNELS ALONG ATLANTIC SEABOARD:

The March 1962 storms along the Atlantic seaboard roughed-up the ocean bottom as much, if not more than it altered the beaches, according to a June 1962 report by the Coast and Geodetic Survey, U. S. Department of Commerce.

Working from Survey launches and ships, the hydro-parties have come up with a number of surprising discoveries. Major changes, for example, were noted around Cape Henlopen, Del., where 40-foot depths were found to have shoaled to less than 3 feet. Cape Henlopen, itself, has built out several hundred feet to the northwest, partially blocking



Typical chartlet. This is for Chincoteague Inlet, Va.

the old channel. Another survey party, working Sinepuxent Channel, between Assateague Island and the mainland near Ocean City, Md., reportedly found a depth of 19 feet where less than 6 feet of water had been recorded prior to the storm.

New soundings and hydrography reflecting the widespread displacement of channels, the appearance of new shoals and the reduction of others, are shown on five emergency chartlets. These are Ocean City, Md.; Ocracoke Inlet, N. C.; Indian River Inlet, Del.; Chincoteague Inlet, Va.; and Cape Henlopen, Del. Cape Lookout, N. C., and Moriches Inlet, L. I., N. Y., chartlets were ready for issue about June 30, and others will be prepared as field data becomes available.

Commercial and pleasure boatmen are warned of the dangerous shoaling and are urged to supplement their standard nautical charts with these free emergency chartlets.

The Director of the Survey stated that "Some of the changes noted in the configuration of the sea bottom constitute a real and

immediate danger to the hundreds of pleasure boatmen who have already begun the 1962 boating season." The U. S. Coast Guard reports that losses of nearly \$570,000 are sustained annually in damage due to vessels running aground.

Chartlets are available to the public from authorized nautical chart agents, or from the Director, Coast and Geodetic Survey, Washington 25, D. C.



North Atlantic Fisheries Exploration and Gear Research

LONG-LINE GEAR TESTED FOR SWORDFISH:

M/V "Rorqual" Cruise 62-2 (June 18-28, 1962): Pelagic gear trials using long-line gear were conducted during an 11-day cruise by the U. S. Bureau of Commercial Fisheries research vessel Rorqual to determine the feasibility of this method as an effective supplement to commercial swordfish harpoon fishing. The area of operations extended from 20 miles SSW. to 35 miles SSE. of No Mans Land Island (50 miles SW. of Cape Cod) in 27 to 31 fathoms depth. Commercial swordfish vessels were working successfully in those waters at the time.

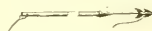
Long-line gear units consisted of 72-fathom baskets, each with 3 hooks spaced at 24 fathoms. Each set was baited, half with frozen squid and half with frozen blueback herring. The fishing depth of 5 out of the 6 sets made was estimated to be 0 to 10 fathoms from the bottom. Depth of the final set was estimated to be 9 to 20 fathoms from the bottom. Setting times were arranged to fish the gear according to tidal current in relation to bottom contours and to determine possible differences in swordfish feeding habits. A hydraulic crab and long-line block was successfully used to retrieve all sets, although a need for modifying its installation on the vessel was indicated. The six sets made, comprising 270 hooks, demonstrated that use of the gear for swordfish in the area fished would be impractical because of shark infestation at that time of year. From a total of 93 fish caught, 89 were sharks.

In addition to long-line fishing, night-lighting collections were preserved, depth



Hydraulic crab and long-line block used to retrieve fishing gear.

casts taken, and biological examination made on the catch. Six swordfish were examined aboard a commercial fishing vessel. Sexual glands and eyesockets of all swordfish were preserved for future detailed analysis to determine sex and age. Swordfish stomach contents consisted of hake (Urophycis spp.), squid (Loligo pealli), blueback herring (Alosa aestivalis), and butterfish (Poronotus triacanthus). Partial identification of dip-net catches included the Atlantic saury (Scomberesox saurus), blueback herring (Alosa aestivalis), squid (Loligo pealli), and the pelagic stage of the American lobster (Homarus americanus).



North Atlantic Fisheries Investigations

LIVE MARINE SPECIMENS AND BIOLOGICAL DATA ON HAKE COLLECTED:

M/V "Delaware" Cruise 62-8 (June 25-28, 1962): To collect live specimens of the common offshore marine species off the New England coast was the purpose of this cruise of

the research vessel Delaware of the U. S. Bureau of Commercial Fisheries.

Three bottom tows were made in the South Channel area and ten tows south of Marthas Vineyard. Seven of the ten tows south of Marthas Vineyard were made to collect biological data on the American hake and to collect live specimens.



Barn-Door Skate

Yellowtail flounder, whiting, butterfish, long-horned sculpin, spiny dogfish, sea raven, eel pout, and skate were among the live specimens brought to the laboratory. Otoliths (ear bones) and stomachs were collected from American hake caught on the cruise.

OCEAN BOTTOM SEDIMENTS AND MARINE ANIMAL LIFE STUDIED:

M/V "Delaware" Cruise 62-7 (June 11-20, 1962): A study of ocean bottom sediments and the quantitative and qualitative composition of ocean bottom life on the continental shelf south of Nantucket and Marthas Vineyard was the objective of this cruise of the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware completed on June 20, 1962.

Approximately 300 sediment samples were collected on 8 north-south transects across the shelf. In addition, 600 samples of bottom animals were collected. These samples will be analyzed in the laboratory as part of the program studying the relations of bottom-living fish. Fine and medium sands most commonly occurred in shoal water, while the silt-clay sediments were found mostly in deeper water. Water temperature measurements were made at all stations.

WOODS HOLE BIOLOGICAL LABORATORY IN MASSACHUSETTS DEDICATED:

A Federal fishery program that had a modest beginning at a simple lighthouse station 91 years ago, was honored



Aquarium and maintenance building of U. S. Bureau of Commercial Fisheries Biological Laboratory, Woods Hole, Mass.

June 23, 1962, at the dedication of the new Woods Hole, Mass., Biological Laboratory of the U. S. Fish and Wildlife Service's Bureau of Commercial Fisheries.

The original Fisheries Laboratory at Woods Hole--the first fisheries and marine biological research laboratory in the United States--was established in 1871 at the Lighthouse Station. In 1883, it was moved to land given to the U. S. Commission of Fish and Fisheries, a predecessor agency of the Fish and Wildlife Service. Spencer F. Baird, the first Commissioner of Fish and Fisheries and Secretary of the Smithsonian Institution, also was the first director of the laboratory. The scientific accomplishments of the staff and of visiting scientists from leading universities, who conducted research during summers, gained international attention.

The ravages of time and three hurricanes took a heavy toll. Replacing of facilities at the Woods Hole Laboratory was begun in 1957 and completed in 1961 at a cost of more than \$1 million.

The present staff of 25 scientists, supported by 55 technical and administrative personnel, conducts biological and oceanographic research programs concerned with the offshore groundfish of the northwest Atlantic--one of the most valuable fisheries of the world, utilized and managed by 13 nations under agreements established by the International Commission for the Northwest Atlantic Fisheries (ICNAF). The research commitments of the United States under ICNAF agreements are responsibilities of the staff of the Woods Hole Laboratory. The Laboratory's programs are concerned with the problems of conservation of haddock, cod, ocean perch, whiting, flounders, sea scallops, and industrial species. It computes the natural production of these species in order to advise what measures must be taken to achieve a sustained maximum yield. It also collects information necessary for documenting the natural changes that occur in environment and in populations.

The new three-story Laboratory Building has 24,000 square feet of floor space devoted to "wet laboratories," equipped with running sea water, and other laboratories, offices, a scientific library, and conference room.

A second building houses maintenance facilities and an aquarium for experiments on marine fishes, but functions during the summer as a public exhibition. It was visited last year by more than 200,000 persons.

The new dock facilities are designed to accommodate ocean-going vessels, as well as smaller vessels to be used in inshore work. The new fishery-oceanographic research vessel Albatross IV, scheduled for delivery in October 1962, will be docked there.



North Pacific Exploratory Fishery Program

SURVEY OF DEEP-WATER MARINE FAUNA OFF MOUTH OF COLUMBIA RIVER CONTINUED:

M/V "Commando" Cruise 4: The sixth in a series of cruises designed to study deep-water marine animal life along a track line southwest of the Columbia River mouth was completed on June 15, 1962, by the U. S. Bureau of Commercial Fisheries chartered research vessel Commando. Twenty drags of one-hour each were made with a standard 400-mesh eastern otter trawl with a small mesh liner at depths from 50 to 450 fathoms (300 to 2,700 feet) to monitor stations which had been established on previous cruises. Eight additional short drags were made in the area of the track line to supply Dover sole and sablefish for Oregon Fish Commission personnel to tag. The track line was extended from 500 to 1,000 fathoms and stations were located using a high-resolution low-frequency echo-sounder. At each of the deeper stations, a drag was made using a 42-foot shrimp trawl hauled on a single wire with 20-fathom bridles. To help maintain the gear on the bottom, each door was weighted with approximately 150 pounds of steel plate. Stainless steel ball-bearing swivels were needed to eliminate twisting of the wire and bridles. Cable to depth (scope) ratios of less than 1.7 to 1 were used when trawling at the deeper stations.

Samples of fish were collected for the Atomic Energy Commission and delivered to the Laboratory of Radiation Biology, University of Washington, for radiological analysis. Additional samples were collected for the Bureau's Technological Laboratory in Seattle and the College of Fisheries, University of Washington.

The cooperative study with the Oregon Fish Commission to study the migrations of deep-water commercial species in the area of the track line was expanded, resulting in the release of tagged fish--1,626 Dover sole and 576 sablefish--at depths from 50 to 300 fathoms. A total of 3,455 Dover sole and 576 sablefish had already been tagged up to then, with recoveries of 12 Dover sole and 1 sablefish.

Commercial species of fish caught were the same as those taken in previous cruises (see table). Several other species of rockfish were also taken. Dover sole were

Commercial Species of Fish Caught by M/V Commando
During Cruise 4 (May 14-June 15, 1962)

Species	Scientific Name
Sablefish	<i>Anoplopoma fimbria</i>
Dover sole	<i>Microstomus pacificus</i>
English sole	<i>Parophrys vetulus</i>
Petrale sole	<i>Eopsetta jordani</i>
Halibut	<i>Hippoglossus stenolepis</i>
Turbot	<i>Atheresthes stomias</i>
Hake	<i>Merluccius productus</i>
Ocean perch	<i>Sebastes alutus</i>

caught out to 400 fathoms and sablefish to 600 fathoms. The greatest catch of both species was 1,500 pounds per hour, with Dover sole being most abundant at 225 fathoms and sablefish at 325 fathoms. There was a definite trend for larger individuals to be taken in deeper water. The greatest catch of ocean perch was made in 225 fathoms where 2,000 pounds were taken in a 1-hour tow. Other commercial species of fish were not caught in great abundance.

The only commercial species of invertebrates taken in large numbers was the tanner crab (*Chionoecetes tanneri*). Males were found to be concentrated at 300 fathoms with females most abundant at 375 fathoms. That was in sharp contrast to the winter distribution when both sexes were found concentrated together in 350 fathoms. The distribution was similar to that found at the same time the previous year. Although the catch per hour in numbers in the areas of highest concentration of males and females was greater for females, the larger size of the males resulted in a similar catch per hour in pounds for both sexes (160 pounds per one-hour tow). Deep-water sampling with the shrimp trawl extended the observed depth range of juvenile crabs in the study area down to 1,000 fathoms. A species similar to the tanner crab was being harvested by the Japanese in northern waters and a fishery is just developing in southeastern Alaska. Indications are that large quantities of this crab may exist along our coast but further explorations will be needed in the deeper waters along the continental shelf before the populations can be fully delineated.

The successful extension of the track line to 1,000 fathoms has resulted in the capture of several species of fish and invertebrates new to this study. In particular are the following: (1) a large cottid fish (possibly *Cot-tunculoideus*), (2) a melamphid fish, (3) several large pycnogonids (sea spiders), and (4) two species of large deep-water shrimp.

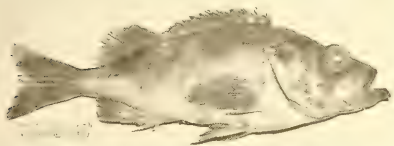
Note: See Commercial Fisheries Review, Feb. 1962 p. 32.

SURVEY OF BOTTOMFISH POPULATIONS IN GULF OF ALASKA CONTINUED:

M/V "John N. Cobb" Cruise 54: An 8-week exploratory bottomfish cruise to the Gulf of Alaska was completed June 8, 1962, by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb.

The survey was undertaken in cooperation with the International Pacific Halibut Commission and the Alaska Region of the Bureau of Commercial Fisheries. Primary objectives of the survey were to assess the magnitude of latent bottomfish populations in the Gulf of Alaska, and obtain information on the age and size composition of bottomfish encountered.

The area explored extended from Cape St. Elias to Portlock Bank near Kodiak Island. Eighty-three exploratory drags of one-hour each were made with a commercial otter-trawl net. The drags were made in water 40 to 270 fathoms deep. Total catches ranged from 130 to 5,300 pounds and averaged 1,350 pounds per individual drag. Turbot (*Atheresthes stomias*), flathead sole (*Hippoglossoides elassodon*), small pollock (*Theragra chalcogrammus*), and tanner crab (*Chionoecetes*) dominated the catches. Good catches of up to 2,000 pounds of Dover sole per hour of trawling were taken in Albatross Gully in 250 fathoms of water. The largest catch of Pacific ocean perch (*Sebastes alutus*) was 3,000 pounds, and most catches of that species were less than 500 pounds.



While the John N. Cobb was surveying Albatross Gully, personnel aboard the vessel were able to observe the operations of two Russian trawlers. They were estimated to be approximately 160 feet in length and were similar in design to North Atlantic side trawlers. An estimated catch of 15,000 pounds of Pacific ocean perch was observed taken by one of the Russian trawlers after it had trawled for about 1½ hours. No other species except Pacific ocean perch were seen; however, the catch was dumped directly

into the hold. The net appeared to be rigged to fish 4 to 5 feet off the bottom.

Note: See Commercial Fisheries Review, Dec. 1961 p. 42, Oct. 1961 p. 24.

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OCEANIC FISH SURVEY OFF PACIFIC NORTHWEST AND CALIFORNIA COASTS:

M/V "John N. Cobb" Cruise 55: To study the oceanic or offshore fish off the coasts of Washington, Oregon, and southern California, was the primary purpose of a 12-week cruise of the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb. Oceanographic data also are to be obtained off the Washington and Oregon coasts. The vessel left Seattle on July 9, 1962.

Phase 1, July 9-29: Albacore tuna investigations in waters between 48° N. latitude and 42° N. latitude and seaward to 130° W. longitude.

Phase 2, August 5-31: California Cooperative Oceanic Fisheries Investigation drag lines 60, 70, 80, 90, 100, and 110. Waters off California from 38° N. latitude to approximately 35.5° N. latitude and seaward to 125° W. longitude.

Phase 3, September 1-21: Gear test evaluation in coastal waters of southern California.

Trolling and midwater trawling will be the main methods for catching fish. All albacore tuna in suitable condition will be tagged and released. Pertinent information on albacore tuna catches will be broadcast to the fishing fleet by radio from the John N. Cobb. Night light fishing stations will be made along the track line of Phase 1 of the cruise. Oceanographic stations will be occupied daily.

During the second phase of the cruise, California Cooperative Oceanic Fisheries Investigation stations on lines 60, 70, 80, 90, 100 and 110 will be occupied using the John N. Cobb's large midwater trawl. All tows will be made, if possible, by retrieving cable to sample equally from maximum depths fished to surface. During the third phase of the cruise, a concentrated effort will be made to determine the fishing capabilities of the large midwater trawl. Information supplied by the La Jolla Biological Laboratory, California Fish and Game, and other sources will be used to determine those areas showing

most promise for conducting midwater trawl experiments.



Oregon

RESEARCH IS KEY TO EXPANDING SHRIMP FISHERY:

Shrimp are being landed by commercial vessels in abundant supply to canneries in the Coos Bay-Charleston area. In Oregon, four canneries are operating in that area, employing an estimated 100 pickers, cannerymen, and other personnel. Since this time of year is normally a slack period in cannery operations, the landings of shrimp are a boon to employment.

Preliminary investigations for possible shrimp-producing areas were first conducted along the Oregon coast in 1951 and 1952 by the Oregon Fish Commission. Although shrimp had been harvested for many years off Alaska, British Columbia, and Puget Sound, Washington, it was not known whether sufficient quantities of shrimp were available to support a commercial harvest in Oregon waters. It was known, however, that shrimp of commercial size did occur to some degree.

The Fish Commission's exploratory cruises in the Coos Bay area were conducted aboard the Nel-Ron-Die, a commercial otter-trawl vessel. This operation involved the use of heavily-weighted nets towed along the ocean floor in depths of from 300 to 600 feet. Results indicated that a commercial fishery for shrimp was feasible in that area as well as several others along the Oregon coast.

Since that time, the shrimp industry in the Coos Bay-Charleston area has undergone a healthy rate of growth. In place of 1 cannery working part time initially to handle the catch of a few boats, 4 canneries now function full time to accommodate the catches of a sizable fleet of shrimp vessels. Astoria and Brookings areas also support a shrimp fishery, adding further to the importance of this Oregon product.

This is an excellent example of how research into a new field has paid big dividends in boosting local and State economy and providing a new product for the consumer.

* * * * *

BEHAVIOR OF YOUNG SALMON IN RESERVOIRS BEING STUDIED:

The opening of a new research laboratory at Redmond, Oregon, was announced by the Oregon Fish Commission on July 9, 1962. The Commission's Director of Research, stated that studies will be carried out there on the behavior of young salmon-like fish (salmonids) in reservoirs. "Much more has to be known about the behavior of juvenile salmon in reservoirs," the Director of Research said, "and the purpose of this study is to try and gain the needed information in order to help with the design of future fish passage facilities." This is a phase of the over-all fish passage research program initiated by the Secretary of the Interior in 1961, and the research will be done under a contract from the Bureau of Commercial Fisheries.

Field work for the project will be conducted at Lake Simtustus, behind Pelton Dam on the Deschutes River. Floating traps and small-mesh gill nets will be used to gather specimens and SCUBA gear will be employed for underwater observations. This particular study will last three years with two full years of field work. An identical study under the same program is being conducted by Commission personnel at North Fork Reservoir on the Clackamas River.

Note: See Commercial Fisheries Review, October 1961 p. 12.



Oysters

LONG ISLAND SOUND OBSERVATIONS ON SPAWNING AND SETTING, 1962:

As during the previous 25 years, the biologists of the U. S. Bureau of Commercial Fisheries Biological Laboratory, Milford, Conn., will conduct systematic observations on gonad development, spawning and setting of oysters and starfish in Long Island Sound. These studies have been carried on for several reasons, chiefly, to ascertain the ecological conditions that control time and intensity of setting of the two species and to keep the members of the oyster industry informed as to the conditions existing in the Sound.

The basic ten stations at which observations will be made and samples taken will remain the same as last year. Several supplementary stations may be established later in the season, if conditions require it.

This summer the biologists will continue to evaluate the effectiveness and safety of the chemical method for control of shellfish predators. The center of the studies will be located in one of the relatively isolated inlets, commonly called "gut," which at present maintains an extremely high population of drills rendering any oyster operations virtually impossible.

The studies will be conducted in cooperation with members of the Connecticut oyster industry. It is planned to treat approximately 30 acres of oyster bottom with a mixture of sand, Polystream and Sevin to destroy oyster drills. After the treatment, cultch consisting of old shells will be placed on the bottom to collect a set of oysters.

To verify some of last year's observations, that chemically-treated cultch collects more set, one 4-acre plot will be planted with chemically-treated shells, while an adjacent plot of the same dimensions will be covered with untreated shells.

Extensive studies to be made in the experimental area will include:

- (1) Examination of the condition of approximately 150 bushels of mature, ready-to-spawn oysters, which will be planted in the area treated with sand, Polystream, and Sevin.
- (2) Observations on time and intensity of setting of oysters and starfish at 5 stations located within the experimental area.
- (3) Examination of numerous plankton samples to determine the composition of microscopic plant and animal organisms in sea water, especially the kind and number of molluscan larvae.
- (4) Observations on juvenile clams, both the hard clam (*Mercenaria mercenaria*) and the soft clam (*Mya arenaria*), that will be placed on the bottom prior to the treatment and after the treatment. These observations will consist, in part, of observing survival and growth of the different groups.
- (5) A team of divers will examine the conditions on the bottom to determine the effectiveness of the treatment and its effects on bottom forms in general.
- (6) Numerous oyster drill traps, baited with mussels, will be used to determine the density of drill populations prior to the treatment and after it.

During the past winter the biologists found an extremely simple, effective and safe method of marking shells of mollusks in studies of their growth, etc. The method consists in painting the shells with an instant-dry, waterproof preparation known under the name of "Magic Marker." (Bulletin No. 1, July 9, 1962.)

* * * * *

MARYLAND OBSERVATIONS, 1962 SEASON:

Since August 24, 1961, oysters generally fattened and grew well during both the fall and spring seasons in the Maryland Chesapeake area, according to the "Special Oyster Bulletin" of the State of Maryland Chesapeake Biological Laboratory, Solomons.

Salinity of the water at Solomons remained near or somewhat above normal since mid-October 1961 after two years of below normal levels.

Water temperatures were above normal during the fall and were below during the winter and early spring. In late April and during May water temperatures were higher than normal. At the end of June the water temperature was at about the seasonal level (approx. 78° F.).

In some areas, oysters reached spawning condition in May and those examined during June from areas near and below Solomons were mostly either partly spawned or ready to spawn.

Oyster Mortalities: Certain known causes of oyster mortality have been less destructive during the past year.

The fungus *Dermocystidium* remained present from the Solomons area on down-bay. Infection of oysters was light and generally resulted in only minor losses.

The development of "stagnant" or oxygen-deficient water at the bottom was confined to deeper water last season than for several preceding years so that little, if any, deep-water oyster kill resulted.

The parasite MSX, which has proved so destructive in Delaware Bay and certain areas of Virginia, continues to be

present in Pocomoke Sound and at scattered points throughout the Tangier Sound area. Fewer infected oysters have been found this summer than were present in samples taken last fall and the majority of samples have been negative. Those taken in June have not yet been completely analyzed.

An encouraging note comes from Delaware Bay where it is reported by Rutgers University that oyster mortalities in New Jersey were much lighter during 1961 than for the previous years of the MSX epidemic. There is indication that the few old oysters which survived the earlier kill are resistant to the parasite and that the new set from these resistant oysters has suffered less mortality from MSX than did the original stock. The development of resistant strains of oysters is believed to be the most effective method by which production in the hard hit MSX areas can be restored.

Evidence from infected oysters grown in tanks of low salinity water at Solomons, and from field observations by the Virginia Fisheries Laboratory on the upper James and on lightly infected seed transplanted to lower salinity grounds in Virginia, continues to indicate recovery from light MSX infection when oysters are moved to low salinities.



Planting seed oysters.

With the opening of the James River seed beds to out-of-state buyers, the Maryland Department of Tidewater Fisheries put into effect a permit system under which oysters from MSX-free portions of the James could be planted in Maryland. The State Laboratory at Solomons this spring examined numerous samples of Virginia seed for which permits were sought. The pattern of infestation as previously described by the Virginia Fisheries Laboratory applied generally to findings for these samples. Since the processing of numerous samplings is very time-consuming, the granting of later permits has been based largely upon knowledge of MSX conditions in the areas from which the seed originated.

The following describes the general MSX picture for the Chesapeake area. Conditions in Virginia are based upon extensive studies by the Virginia Fisheries Laboratory supplemented by examination at Solomons of scattered samples of Virginia seed to be transplanted into Maryland.

James River beds above Wreck Shoal have remained free of MSX and are considered safe for transplanting to uninfested areas. However, they are susceptible to MSX and will become infected when planted in areas where MSX is present. Oysters on Wreck Shoal have shown MSX infection during each of the past two fall seasons when salinities are high but have recovered during the following spring when salinities are low. It is possible that some residual undetected infection may be carried that develops again the following fall.

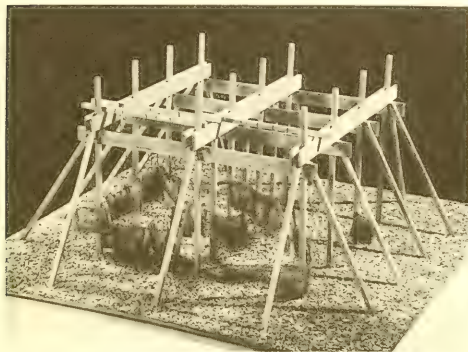
Below Wreck Shoal moderate to heavy MSX infestation has been found throughout the year accompanied by oyster losses that occasionally are severe. Samples of seed from the upper portion of Bennett Creek and Warwick River indicate that low salinity areas of tributaries to the infested portion of the seed area may also remain free of the parasite.

In general, most other major oyster producing waters of Virginia have shown the presence of MSX except in the upper Rappahannock and the Potomac River tributaries. The heaviest infestation and most severe losses have occurred in the lower portions of the Bay area. The only Maryland waters

in which infected oysters have been found are from Hooper Straits through Tangier and Pocomoke Sounds, and in all of the Maryland Seaside. No MSX has yet been found in the Holland Straits seed area.

Very light infestations of MSX can be easily missed since the number of oysters processed seldom can exceed more than 10 to 30 from a given sample. From those portions of the James where the presence of MSX is questionable or extremely light, it is felt that seed can be safely transplanted to the Pocomoke or Tangier Sound areas without endangering native stocks. It probably is capable of producing good yields. It is also likely that such seed would do well in other Maryland areas but, where MSX has not yet been found, it seems unwise to plant seed that may contain it until we are positive that low salinity can prevent its spread.

The fact that salinities in the Bay this year are running about 2 parts per thousand higher than during the past two seasons may permit a more intensive development of MSX in the areas now lightly infested and may also permit its penetration further up the Bay if salinities continue to run high. However, the infestation of Maryland beds by this parasite is not at present alarming and it is hoped that natural conditions and build up of resistance will continue



This is a model of a rack sustaining setting in depth spat collecting bags arranged to cover depth from bottom to 7 feet. This rack was developed in 1958 at Annapolis by the Bureau of Commercial Fisheries and is not necessarily the same used by the Chesapeake Biological Laboratory.

Setting Observations: Test shells have been exposed in the Solomons-Potomac-Holland Straits area commencing June 4. These are clean shells in wire bags suspended just above the bottom. The shells are changed approximately once a week and the spat attached to the inner faces of twenty shells are counted. Since both the outer and inner faces have been found to catch equally well, the counts given represent the quantity on ten shells (both sides). Assuming that a bushel would contain about 500 of these approximate 4 inch shells, then the count per bushel would be 50 times the figures listed.

From the examination of oyster bar samples, it was found that a very light set of 1962 spat had occurred during the latter part of May as shown by small spat 1/4 to 3/8 inch long that were found on oysters and old cultch removed from the bar during the second week of June. These were found at only three locations in Tangier Sound and ranged from 2 per bushel on Lambstone to 14 per bushel on Great Rock. While the quantity is insignificant, this set is of interest since it is one of the earliest recorded in our area.

No intensive 1962 oyster set had yet occurred as of July 6 on test shells. An unusually heavy barnacle set occurred during the third week in June that amounted to as much as 100 barnacles per shell face at Cinder Hill in Holland Straits.

Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS, JUNE 1962:

Item and Period	1962	1961	1960	1959	1958
..... (1,000 Lbs., Heads-Off).....					
Total Landings, So. Atl. and Gulf States:					
August	-	10,944	20,441	18,595	14,173
July	-	10,477	21,746	17,493	13,457
June	10,000	8,220	12,427	14,547	10,241
Jan.-May	20,600	22,732	24,348	20,965	25,856
Jan.-December ...	-	91,280	141,035	130,660	116,552
Quantity canned, Gulf States 1/:					
August	-	1,206	5,041	2,427	2,809
July	-	3,042	6,319	3,085	4,805
June	5,000	3,744	7,537	7,641	5,107
Jan.-May	2,600	1,661	2,303	3,297	2,002
Jan.-December ...	-	15,760	28,594	24,679	26,404
Frozen inventories (as of end of each mo.) 2/:					
August 31	-	12,728	20,171	23,780	15,274
July 31	-	14,849	17,397	22,357	12,351
June 30	4/	19,416	15,338	19,283	10,664
May 31	13,685	24,696	17,540	21,137	11,013
April 30	15,637	27,492	20,502	23,331	12,211
January 31	-	31,842	34,332	30,858	17,983
Imports 3/:					
August	-	6,743	6,407	5,107	6,623
July	-	6,635	7,319	7,861	6,340
June	4/	8,065	8,932	8,300	6,018
May	11,221	8,278	9,902	8,264	5,666
Jan.-April	43,383	40,825	32,531	33,262	20,594
Jan.-December ...	-	126,268	113,418	106,555	85,393
1/Pounds of headless shrimp determined by multiplying the number of standard cases by 33.					
2/Raw headless only; excludes breaded, peeled and deveined, etc.					
3/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.					
4/Not available.					
Note: Data for 1962 and 1961 are preliminary. June 1962 data estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.					



South Atlantic Exploratory Fishery Program

CALICO SCALLOP EXPLORATIONS OFF NORTH CAROLINA:

M/V "Silver Bay" Cruise 39: To determine the availability of scallops northward of Cape Lookout was the first purpose of this cruise. A second purpose was to assess the animal life of the area off the North Carolina coast, primarily between 50 and 100 fathoms. The 20-day trip (completed June 12, 1962) was made by the exploratory fishing vessel

Silver Bay of the U. S. Bureau of Commercial Fisheries.

Between Capes Lookout and Hatteras 70 stations were dredged to determine the status of the calico scallop (*Pecten gibbus*) resource earlier located by the M/V Silver Bay and which passed out of the fishery during 1961. Mixed dead shell (mostly *Pecten*) was dredged throughout the area surveyed. The only live commercial-size scallops were several taken in 19 fathoms near Cape Lookout. In the general area off Core Banks where commercial concentrations were located before, small seed scallops (3 to 5 millimeters in diameter) attached to the dead shells were present in large numbers at several stations. Commercial-size scallops were not found in quantity in the survey area at the time.

A total of 68 stations were dredged north of Cape Hatteras. Sea scallops (*Pecten gran-dis*) were caught in depths from 20 to 58 fathoms between latitudes $35^{\circ}24'$ and $36^{\circ}32' N$. Catches ranged up to $5\frac{1}{4}$ bushels of scallops (81 to 158 millimeters in diameter, 110 average) per 30-minute drag. Scallops as small as 14 mm. in diameter were taken. The best depth for larger catches was $39\frac{1}{2}$ fathoms and meat counts averaged 30 to 35 per pound.

Fish trawling with 40- and 60-foot 2-seam balloon trawls was tried at 25 stations, primarily between 50 and 100 fathoms eastward and north from Cape Lookout to the Virginia boundary. Catches were small. Lobsters (*Homerus americanus*) were taken occasionally as far south as latitude $35^{\circ}56.5' N$.

On June 6 the Silver Bay encountered a U.S.S.R. exploratory fishing vessel off the North Carolina coast north of Cape Hatteras. M/V Silver Bay personnel were invited aboard and learned that the vessel was exploring for offshore menhaden stocks. On June 11 what appeared to be a sistership was observed along the 20-fathom curve off South Carolina.

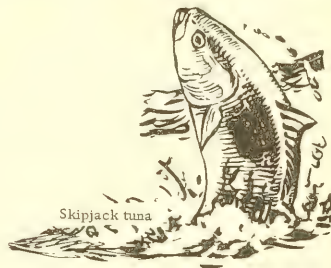


Tuna

FIRST RECORDED SKIPJACK MIGRATION FROM EASTERN PACIFIC TO HAWAII:

A 26-pound skipjack tuna captured on June 12, 1962, by the sampan Yellowfin off Oahu has provided the first evidence of movement of this species from the fishing grounds off

the American coast into Hawaiian waters, according to the Hawaii Biological Laboratory of the U. S. Bureau of Commercial Fisheries.



This skipjack was tagged on September 5, 1960, in the Eastern Pacific, off Baja California about 20 miles WSW. of Turtle Bay (approximate coordinates, $27^{\circ}30' N$. lat.; $115^{\circ} W$. long.) by scientists of the Inter-American Tropical Tuna Commission on board the San Diego clipper M/V Westport. At time of release the fish was estimated to have weighed between 6 and 7 pounds. During the 22 months the skipjack grew about 19 pounds and travelled a minimum of 2,500 miles. The fish, on recovery, was in excellent condition, with the tagging wound perfectly healed.

In the past few years, since large-scale tagging of tuna has been started in the Pacific, there have been several spectacular trans-oceanic recaptures of albacore which were tagged off the American coast and retaken by Japanese fishermen. Skipjack, although they have been tagged in large numbers and quite successfully, as attested by good percentages of tagged fish recaptured, have not hitherto been shown to move from one fishery to another. For example, the Bureau's scientists have released over 13,000 marked skipjack in the central Pacific area, of which 1,331 have been recaptured, all by Hawaii fishermen. Releases of over 80,000 skipjack in eastern Pacific waters by scientists of the Inter-American Tropical Tuna Commission and California Department of Fish and Game have produced many recaptures, all but the latest one being within the area of the West Coast fishery. Much skipjack is fished in Japanese waters, and some have been tagged there in the past, but there has been no indication of any interchange between the far western Pacific and the other areas where this species is exploited.

NEW CANNERY BEING BUILT IN PUERTO RICO:

A new United States firm, recently established, with offices in New York City, is building a tuna cannery in Mayaguez, Puerto Rico. This was announced in April 1962 by the President of the new firm.

The new cannery firm was organized by a New York-based investment and development company which operates in some 20 countries.

Scheduled to start canning tuna for private label customers next November, the new packing plant will cover an area of 60,000 square feet and include a 1,000-ton capacity freezer. Eventually it will employ from 200 to 300 persons. The new project is being established with the cooperation of Puerto Rico's Economic Development Administration and involves an over-all investment of \$1.7 million.

This is the third company to locate a tuna cannery in the maritime zone of Mayaguez, on the Island's west coast 108 miles from San Juan.



U. S. Fishing Vessels

FISHERIES LOAN FUND AND OTHER FINANCIAL AID FOR VESSELS, APRIL 1-JUNE 30, 1962:

From the beginning of the program in 1956 through June 30, 1962, a total of 1,169 loan applications for \$33,008,423 were received by the U. S. Bureau of Commercial Fisheries, the agency administering the Federal Fisheries Loan Fund. Of the total, 618 applications (\$14,646,311) have been approved, 405 (\$10,599,362) have been declined or found ineligible, 123 (\$5,726,011) have been withdrawn by applicants before being processed, and 23 (\$407,011) are pending. Of the applications approved, 251 (\$1,629,728) were approved for amounts less than applied for.

The following fishery loans were approved from April 1, 1962, through June 30, 1962:

New England Area: Sheldon S. Kent, Sr., Fairhaven, Mass., \$98,000; and Boat Sunbeam, New Bedford, Mass., \$9,200.

South Atlantic and Gulf Area: G. Conrad and Claudia Rogers, Darien, Ga., \$15,271; W. J. Pyron, St. Marys, Ga., \$12,000; Tilman P. Charpentier, Galliano, La., \$11,825; Jacqueline Valence, Jr., Westwego, La., \$57,240; and Henry W. Humphreys, Brownsville, Tex., \$36,800.

California: Louis E. Albin, Crescent City, \$6,864; Jim M. and Bernice J. Stillman, Long Beach, \$13,445; Harold C. Buckman, Morro Bay, \$1,613; Raymond Wadsworth, San Leandro, \$9,000; and Ivan Goyette, San Pedro, \$10,269.

Pacific Northwest Area: John Edelman, Anacortes, Wash., \$10,000; Boris Olch, Anacortes, Wash., \$36,000; Charles R. Beechey, Ocean Park, Wash., \$8,000; Robert S. Kanekkeberg, Port Orchard, Wash., \$8,000; Mathias J. Hoddevik, Seattle, Wash., \$9,000; Bernard and Richard Linovg, Seattle, Wash.,

\$21,750; Dan Luketa, Seattle, Wash., \$33,500; and Clayton H. Harris, Tacoma, Wash., \$25,000.

Alaska: Vernon Eckman, Juneau, \$10,000; Peter N. Holm, Juneau, \$81,530; and Ralph D. Hillmer, Ketchikan, \$1,093.

Under the Fishing Vessel Mortgage Insurance Program (also administered by the Bureau) during the second quarter of 1962, approval was granted for the insurance of mortgages on fishing vessels owned by the following and in the amounts indicated: International Tuna Co., San Diego, Calif., \$527,490; Joseph R. Fribrock, Seattle, Wash., \$30,546. Under this program, which started July 5, 1960, approval was granted before the last quarter of 1961 to the following: Major J. Casey Corp., New Bedford, Mass., \$60,000; Sylvester Maloney, New Bedford, Mass., \$60,000; Ric-Man Shrimp Co., Inc., Tampa, Fla., \$34,500; Joseph R. Fribrock, Seattle, Wash., \$75,000. Since the start of this program, 12 applications were received for \$1,402,346. Of the total, 9 applications have been approved for \$937,346.

In the Fishing Vessel Construction Differential Subsidy program, the following construction differential subsidies were approved during the second quarter of 1962: Boston Fishing Boat Co., Inc., Boston, Mass., \$161,379; Jacobsen Fishing Co., Inc., Fairhaven, Mass., \$76,750; Trawler Jeanne D'Arc, Inc., Rockland, Maine, \$70,814; Charlevoix Transit Co., Sturgeon Bay, Wis., \$161,379. The first approval in this program was made in March 1961. The amount approved for subsidy represents one-third the cost of a new vessel. Since the beginning of the program on June 12, 1960, 10 applications were received for \$689,313, of which 5 applications were approved for \$507,646. Approval of 2 applications under this program is pending. Three applications from ineligible fisheries were disapproved.

Note: See Commercial Fisheries Review, May 1962 p. 32.

* * * * *

DOCUMENTATIONS ISSUED AND CANCELLED, MAY 1962:

During May 1962, a total of 47 vessels of 5 net tons and over were issued first documents as fishing craft, as compared with 63 in May 1961. There were 31 documents cancelled for fishing vessels in May 1962 as compared with 24 in May 1961.

Table 1-U.S. Fishing Vessels 1/ --Documentations Issued and Cancelled, by Areas, May 1962 with Comparisons

Area (Home Port)	May		Jan.-May		Total
	1962	1961	1962	1961	
.....(Number).....					
Issued first documents 3/:					
New England	4	4	13	15	33
Middle Atlantic	1	1	2	2	12
Chesapeake	4	4	16	25	75
South Atlantic	3	3	13	15	44
Gulf	10	18	38	52	103
Pacific	25	32	62	70	149
Great Lakes	-	1	-	5	12
Puerto Rico	-	-	-	2	2
Total	47	63	144	186	430
Removed from documentation 3/:					
New England	3	1	11	6	20
Middle Atlantic	5	3	24	15	32
Chesapeake	1	2	6	18	28
South Atlantic	1	3	16	11	29
Gulf	12	5	46	45	104
Pacific	9	10	59	44	111
Great Lakes	-	-	8	7	17
Hawaii	-	-	3	-	-
Total	31	24	173	146	341
1/For explanation of footnotes, see table 2.					

1/For explanation of footnotes, see Table 2.

Table 2-U.S. Fishing Vessels--Documents Issued and Cancelled, by Tonnage Groups, May 1962

Gross Tonnage	Issued ^{2/}	Cancelled ^{3/}
	.....(Number).....	
5-9	12	5
10-19	15	9
20-29	3	2
30-39	4	3
40-49	2	1
50-59	2	2
60-69	1	3
70-79	4	2
80-89	-	1
110-119	-	1
120-129	1	-
190-199	-	1
210-219	1	-
240-249	-	1
480-489	-	-
Total	47	31

^{1/}Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

^{2/}Includes undocumented vessels previously removed from records. Vessels issued first documents as fishing craft were built: 32 in 1962, 1 in 1961, 2 in 1960, 1 in 1959, 1 in 1955, 1 in 1953, 1 in 1951, 6 prior to 1951, and 2 unknown. Assigned to areas on the basis of their home ports.

^{3/}Includes vessels reported lost, abandoned, forfeited, sold alien, etc.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, APRIL 1962:

Imports of fresh, frozen, and processed edible fish and shellfish into the United States in April 1962 were down 11.8 percent in quantity and 7.5 percent in value as compared with the previous month. During that period there were greater imports of fish blocks or slabs, canned salmon (mostly from Japan), frozen cooked tuna loins and discs, frozen shrimp, canned sardines not in oil, and live lobsters from Canada. But imports were down for all types of fillets and steaks, fresh and frozen salmon (mostly from Canada), frozen tuna, canned tuna in brine, canned sardines in oil, canned crab meat, and canned oysters (mostly from Japan).

Compared with the same month in 1961, the imports in April 1962 were up 29.5 percent in quantity and 47.4 percent in value. Higher prices for most imported products and an increase in the imports of higher-priced products account for the greater increase in the value. This April there were more imports of frozen cod, ocean perch, blocks and slabs, and swordfish fillets (from Japan), frozen salmon (from Canada), and canned salmon (from Canada and Japan), frozen tuna (from Japan, West Africa, and Peru), canned light meat tuna in brine (from Japan), canned sardines in oil, canned crab meat (from Japan), live lobsters (from Canada), and frozen spiny lobster tails (from Australia, New Zealand, and South Africa), frozen shrimp, and frozen scallops (from Canada). Imports dropped off for frozen haddock fillets, canned white meat tuna in brine (from Japan), canned sardines not in oil (from South Africa), and frog legs (from Cuba).

In the first four months of 1962, imports were up 14.0 percent in quantity and 22.9 percent in value as compared to the same period in 1961. The greater increase in value was because of the higher prices which prevailed in the first part of this year for nearly all imported fishery products. This year there were more imports of blocks and slabs (the increase was mostly from Norway and Denmark), sea catfish fillets (increase mostly from West Germany), canned salmon (from Japan and Canada), frozen tuna (mostly from Japan, Ecuador,

West Africa, and Peru), canned tuna (from Japan), canned sardines in oil, frozen shrimp, frozen scallops, live lobsters, and spiny lobster tails. Imports were down for swordfish fillets (from Japan), frozen salmon from Canada, canned sardines not in oil (from South Africa), canned oysters (from Japan), and frozen frog legs (from Cuba).

U. S. Imports and Exports of Edible Fishery Products, April 1962 with Comparisons

Item	Quantity				Value			
	Apr.		Jan.-Apr.		Apr.		Jan.-Apr.	
	1962	1961	1962	1961	1962	1961	1962	1961
	. (Millions of Lbs.)				. (Millions of \$)			
Imports:								
Fish & Shellfish:								
Fresh, frozen, & processed ^{1/}	90.8	70.1	366.7	321.8	30.8	20.9	125.1	101.8
Exports:								
Fish & Shellfish:								
Processed only ^{1/} (excluding fresh & frozen)	2.0	1.7	12.1	10.3	1.2	1.1	5.2	5.1

^{1/}Includes pastes, sauces, clam chowder and juice, and other specialties.

United States exports of processed fish and shellfish in April 1962 were up 17.6 percent in quantity and 9.1 percent in value as compared with April 1961. The increase was due to greater exports this April of canned and frozen salmon, sardines not in oil, and squid (principally to Greece). Exports were down for canned mackerel; and because of the scarcity on the United States market, exports were down for frozen shrimp, canned shrimp, and canned oysters.



Compared with the previous month, the exports in April 1962 were down 45.9 percent in quantity, and the value was down 7.7 percent. The lower-priced products like canned squid were exported in greater amounts in April, with some increase in the exports of canned salmon and oysters. Exports dropped for canned mackerel, canned shrimp, frozen shrimp, and frozen salmon.

Processed fish and shellfish exports for the first four months of 1962 were up 17.5 percent in quantity, but the value was up only 2 percent as compared with the same period of 1961. The following products were exported in substantially greater quantities in 1962: canned mackerel, frozen salmon, canned salmon, and canned squid; but exports dropped for canned sardines not in oil, canned and frozen shrimp, and canned oysters. Since most of the increase in exports January-March this year was in the lower-priced products, the value of the exports did not increase at the same rate as the quantity.

Source: United States Foreign Trade (Trade by Commodity), Summary Report FT 930-E, April 1962, U. S. Department of Commerce.

* * * * *

EDIBLE FISHERY PRODUCTS, MAY 1962:

Imports of fresh, frozen and processed edible fish and shellfish into the United States in May 1962 were up 20.2 percent in quantity and 11.7 percent in value as compared with the previous month. During that period there were greater imports of fish blocks or slabs, cod filets, flounder filets (mostly from Canada), frozen swordfish fillets (mostly from Japan), sea catfish fillets, frozen tuna other than albacore, canned tuna (mostly from Japan), canned sardines not in oil (mostly from South Africa), live lobsters from Canada, canned lobster meat from Canada, frozen shrimp, and sea scallops (mostly from Canada). But imports were down for canned salmon (from Canada and Japan), frozen albacore tuna, canned sardines in oil, canned crab meat from Japan, and canned oysters (mostly from Japan).

Compared with the same month in 1961, the imports in May 1962 were up 30.8 percent in quantity and 32.3 percent in value. Most fishery products were imported in greater quantity this May, and imports were up substantially for fish blocks or slabs, canned salmon (mostly from Japan), frozen tuna, canned albacore tuna (mostly from Japan), canned sardines (in oil and not in oil), frozen shrimp, and fresh and frozen scallops from Canada. Cod filets was the only item showing a sizable decline.

In the first five months of 1962, imports were up 17.4 percent in quantity and 24.8 percent in value as compared to the same period in 1961. The greater increase in value was because of the higher prices which prevailed in the first part of this year for nearly all imported fishery products.

This year there were more imports of fish blocks and slabs, flounder fillets from Canada, sea catfish fillets (increase mostly from West Germany), canned salmon (from Japan and Canada), frozen tuna (increase mostly from Japan, British West Pacific Islands, Ecuador, Peru, and British West Africa), canned tuna (from Japan), canned sardines in oil, frozen shrimp, scallops, live lobsters (from Canada), and canned lobster meat from Canada. Imports were down for cod filets (from Iceland), haddock fillets (from Canada and Iceland), fresh and frozen salmon from Canada, canned oysters from Japan, and frog legs from Cuba. The increase in canned sardines in oil reflects the small Maine pack for the 1961 season.

U. S. Imports and Exports of Edible Fishery Products, May 1962 with Comparisons

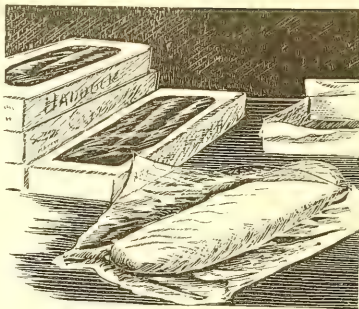
Item	Quantity				Value			
	May		Jan.-May		May		Jan.-May	
	1962	1961	1962	1961	1962	1961	1962	1961
	. (Millions of Lbs.)				. (Millions of \$)			
Imports:								
Fish & Shellfish:								
Fresh, frozen, & processed	109.1	83.4	475.8	405.2	34.4	26.0	159.5	127.8
Exports:								
Fish & Shellfish:								
Processed only (excluding fresh & frozen)	2.1	1.4	14.2	11.7	0.7	0.6	5.9	5.8

Includes pastes, sauces, clam chowder and juice, and other specialties.

United States exports of processed fish and shellfish in May 1962 were up 50.0 percent in quantity and only 13.3 percent in value as compared with May 1961. Exports of canned sardines not in oil were much higher this May and there was some increase in the exports of frozen salmon, frozen oysters to Canada, and canned squid. But exports were down for frozen shrimp, canned shrimp, and canned mackerel.

Compared with the previous month, the exports in May 1962 were up 5.0 percent in quantity, but the value was down 41.6 percent. The increase in quantity was due to greater exports of canned sardines not in oil, canned mackerel, frozen shrimp, frozen oysters, and canned squid (to the Philippines). The over-all decline in value was mainly due to a sharp drop in exports of canned salmon to the United Kingdom. Exports of frozen salmon and canned shrimp were also down.

Processed fish and shellfish exports for the first five months of 1962 were up 21.4 percent in quantity, but the val-



ue was up only 1.7 percent as compared with the same period of 1961. The following were exported in substantially greater quantities in 1962: canned mackerel, frozen salmon, and canned squid (to Greece and the Philippines). Because of the scarcity on the United States market, exports were down for canned sardines not in oil, canned sardines in oil, frozen shrimp, canned shrimp, and frozen oysters (principally to Canada). Since most of the increase in exports January-May this year was in the lower-priced products, the value did not increase at the same rate as the quantity.

* * * * *

SELECTED FISHERY PRODUCTS, JANUARY-MARCH 1962:

Imports (January-March 1962 as compared to January-March 1961): During the first quarter of 1962, a number of fishery products showed important increases in imports over the similar period of last year; included were fresh and frozen tuna, tuna loins, northern lobster, canned salmon, sardines canned in oil, scallops, fish meal, and fish solubles. Significant decreases were recorded in the imports of canned bonito and yellowtail, canned oysters, fresh and frozen salmon, canned sardines (not in oil), frog legs, and swordfish.

Imports of groundfish and ocean perch fillets and blocks were about the same in 1962 as in 1961. Imports of fillets other than groundfish increased 30 percent.

All tuna categories showed a decided increase, with the exception of tuna canned in oil which decreased 17 percent and bonito and yellowtail which decreased 33 percent. Fresh or frozen tuna imports increased 29 percent, Japan being the leading supplier. Canned tuna in brine increased 21 percent, the greater part being shipped from Japan.

India and Pakistan doubled their exports of shrimp to the United States this year, but shrimp exports from Mexico, El Salvador, Panama, and British Guiana dropped. The net result was a 5-percent increase in United States shrimp imports in the first quarter of 1962.



Receipts of canned salmon principally from the two main suppliers--Canada and Japan--increased 46 percent, but im-

Table 1-U.S. Imports of Selected Fishery Products, January-March 1962 with Comparisons

Commodity	January-March	
	1962	1961
Groundfish and ocean perch:	....(1,000 Lbs.)....	
Fillets	19,567	20,925
Blocks or slabs	28,597	27,479
Total	48,164	48,404
Fillets other than groundfish:		
Flounder	3,599	3,008
Fresh-water fish	2,453	1,979
Other	5,628	4,015
Total	11,680	9,002
Swordfish fillets, etc.	5,808	6,644
Tuna, fresh or frozen:		
Albacore	30,519	25,883
Other	40,528	28,985
Total	71,047	54,868
Tuna, loins and discs	2,608	1,878
Tuna, canned in brine:		
Albacore	7,138	6,129
Other	7,329	5,779
Total	14,467	11,908
Tuna, canned in oil	111	133
Bonito and yellowtail, canned	2,120	3,162
Crab meat, canned	952	995
Lobsters, fresh or frozen:		
Northern	3,837	3,031
Spiny	10,994	11,362
Lobsters, canned	405	540
Oysters, mostly canned	1,915	2,429
Salmon:		
Fresh or frozen	1,055	1,718
Canned	1,950	1,332
Sardines:		
Canned in oil	11,488	7,374
Canned not in oil	2,036	3,830
Scallops	1,717	1,026
Shrimp (mostly frozen)	33,164	31,617
Frog legs	249	495
Fish meal	62,774	44,333
Fish solubles	2,830	509

ports of fresh or frozen salmon declined 39 percent. Norway and Denmark supplied most of the 56-percent increase in canned sardines in oil. Imports of canned sardines not in oil decreased 47 percent, the Republic of South Africa shipping only half the quantity shipped in the same period last year.

Imports of sea scallops increased 67 percent. Canada and Japan were the major suppliers; Canada almost doubled its shipments.

Imports of fresh or frozen lobster from Canada increased 30 percent. Other increases were from Brazil, Australia, and New Zealand.

Fish solubles more than tripled shipments in the corresponding period of 1961.

Imports of fish meal increased 42 percent, Canada and Peru supplying the major share.

Table 2-U.S. Exports of Selected Fishery Products, January-March 1962 with Comparisons

Commodity	January-March	
	1962	1961
Fish oils	41,323	36,549
Oysters, shucked	93	249
Salmon:		
Fresh or frozen	562	197
Canned	2,611	2,649
Mackerel, canned	2,013	975
Sardines:		
Canned not in oil	1,430	3,085
Canned in oil	45	65
Shrimp:		
Frozen	613	639
Canned	349	562
Squid, canned	2,631	413
Misc. canned fish	132	156
Misc. fresh or frozen fish	985	643

Exports (January-March 1962 as compared to January-March 1961):

Fresh or frozen salmon exports were almost three times those of the same period in 1961. Canned salmon exports remained about the same. El Salvador took 85 percent of total exports of canned mackerel which more than doubled the first quarter exports of a year before. Exports of canned sardines, not in oil, decreased 54 percent. Exports of fresh or frozen shrimp decreased 4 percent and of canned shrimp 48 percent below shipments in the first quarter a year ago.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

United States imports of tuna canned in brine during January 1-June 30, 1962, amounted to 27,679,895 pounds (about 1,318,100 std. cases), according to data compiled by the Bureau of Customs. This was 17.4 percent more than the 23,575,216 pounds (about 1,122,600 std. cases) imported during January 1-June 30, 1961.

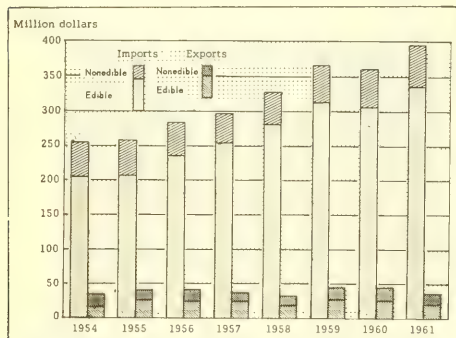
The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1962 at the 12½-percent rate of duty is limited to 59,059,014 pounds (about 2,812,000 std. cases of 48 7-oz. cans). Imports in excess of the quota are dutiable at 25 percent ad valorem.

* * * * *

IMPORTS AND EXPORTS OF FISHERY PRODUCTS, 1957-1961:

United States foreign trade in fishery products (imports and exports of domestic products) was valued at \$432 million in 1961--an increase of \$27.5 million as compared

with the previous year. The value of fishery products imported for consumption was \$397 million--the highest on record. It exceeded the former record established in 1959 by 8 percent and was 10 percent above 1960. The value of fishery products exported was \$35 million--a decline of 21 percent from the previous year and the lowest since 1958.



United States imports and exports of fishery products, 1954-61.

Imports of edible products in 1961 totaled 1.1 billion pounds valued at a record high of nearly \$336 million. Compared with 1960, the quantity remained about the same but the value increased by 9 percent. The gain in value was due to generally higher prices and changes in the composition of the imports. Major increases occurred in imports of groundfish fillets and blocks, fresh or frozen shrimp, tuna canned in brine, and sardines. Imports were down for canned salmon, fresh or frozen sea herring, and tuna.

Imports of nonedible fishery products amounted to over \$61 million--16 percent more than in 1960. The gains were for fish meal, sperm whale oil, and cultured pearls.

Edible fishery products exported in 1961 totaled 40 million pounds with a value of \$19.6 million--a decrease of 35 percent in quantity and 24 percent in value as compared with the previous year. Exports of nonedible domestic products, valued at \$15 million, were 18 percent less than in 1960.

Exports of foreign fishery products amounted to \$6.5 million in 1961 as compared with \$3.4 million the previous year.

Note: See *Commercial Fisheries Review*, May 1962 p. 35.

STATISTICAL DETAIL FOR IMPORTS BEYOND THAT PROVIDED IN NEW TARIFF CLASSIFICATION:

The statistical classifications currently used in compiling data for imports and presented in Schedule A, "Statistical Classification of Commodities Imported into the United States," are based on the Tariff classifications contained in the Tariff Act of 1930. With the enactment of Public Law 87-456, "Tariff Classification Act of 1962," this foundation is changed, therefore necessitating a revision of the statistical classification structure to align it with the new Act. To provide importers and Customs officers with reporting instructions which integrate statistical requirements with the determination of rates of duty, as is done in the current "United States Import Duties Annotated," it is contemplated that the revised statistical classifications will be put into effect concurrently with the effective date of the new tariff, which is January 1, 1963.

The Tariff Commission, Bureau of Customs, and Bureau of the Census (with the guidance of the Interagency Advisory Committee on Foreign Trade Statistics) will determine the additional statistical classifications to be provided beyond those already provided in the new structure. In so doing, every effort will be made to carry forward as much of the present statistical detail as possible without violating the principle of eliminating the illogical classes and anomalies of the old structure which is based on the 1930 Tariff Act categories. At the same time consideration will be given to recommendations from users of the statistics for retaining or combining present statistical classes as well as for providing additional statistical detail, all within the framework of the 1962 Tariff Classification Act.



Whiting

RESULTS OF STUDY ON IMPROVING QUALITY:

The results of a year's study by the U.S. Bureau of Commercial Fisheries Technological Laboratory at Gloucester, Mass., on improving the quality of whiting were presented at an industry meeting in June 1962. The study was requested by industry leaders.

Representatives of 14 whiting firms or associations, from Massachusetts and Maine, and officials from the National Fisheries Institute and the States of Maine and Massachusetts heard the Bureau's reports on its studies conducted on handling and processing whiting, both on the vessel and ashore, and on developing and marketing new whiting products to stimulate this New England industry and the use of this greatly underutilized fishery resource. The whiting industry ranks eleventh in volume and twentieth in value in United States fisheries.

The Bureau's investigations and laboratory work were aimed at finding ways to eliminate or minimize problems that have continued to plague the industry. Bureau technologists explained that although the physical attributes and plentiful supply of whiting make it more desirable than some other species for fried fish, it loses its initial delicious quality at a more rapid rate unless handled with greater than ordinary care.

The Bureau also pointed out to the industry a variety of acceptable fish products made of whiting, including canned whiting, which could be marketed. New whiting products made up and tested for acceptability, taste appeal, and storage life at the Bureau's laboratory included such items as croquettes, burgers, steamed and smoked sausages, smoked whiting, and a freeze-dried patty. Eight of those products were taste-tested at the industry meeting and were termed "encouraging." However, as the Bureau's report commented, "None of these products can be marketed successfully for

any period of time unless the highest quality fish is used consistently."

To reach and maintain this necessary standard of high quality, the Bureau outlined actions the industry could take both aboard the vessels and in the processing plants, such as providing shelving in the vessels' storage pens because whiting is a soft fish particularly susceptible to bruising damage; reducing dock-side layovers to no more than 12 to 14 hours; and using easily-cleaned, salt-resistant aluminum for the fish-hold penboards. Bureau tests resulted in the recommendation of storing fish on the vessels and at the processing plants in tanks of sea water refrigerated to 30° F., eliminating most of the problems arising from storage in ice, and improving greatly the quality of the whiting.

The Bureau's report also included recommendations for increasing efficiency of processing plant operations, reducing labor costs, and new methods of processing. These recommendations were developed by two members of the Bureau's laboratory staff who visited 26 whiting plants during the year.



Wholesale Prices

EDIBLE FISH AND SHELLFISH, JUNE 1962:

As landings continued to increase seasonally, the June wholesale price index for edible fishery products (fresh, fro-

zen, and canned) dropped more than 1.0 percent from the previous month, but was up almost 13.0 percent as compared to June 1961.



Scene on Fulton Street dock (East River) of Fulton Fish Market showing journeyman preparing to load truck.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, June 1962 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes 2/ (1957-59=100)			
			June 1962	May 1962	June 1962	May 1962	April 1962	June 1961
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					4/118.3	119.4	118.9	104.3
Fresh & Frozen Fishery Products:					4/117.5	118.1	117.2	101.0
Drawn, Dressed, or Whole Finfish:					114.3	113.9	119.1	106.7
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.08	.08	59.5	65.7	91.6	67.0
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.44	.41	130.1	122.2	133.1	109.5
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.96	1.00	134.5	139.7	120.5	122.2
Whitefish, L., Superior, drawn, fresh	Chicago	lb.	.69	.71	133.0	106.0	126.9	91.0
Yellow pike, L., Michigan & Huron, rnd., fresh	New York	lb.	.45	.71	73.7	116.3	139.2	92.5
Processed, Fresh (Fish & Shellfish):					5/	113.7	120.4	104.1
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.32	.33	76.5	80.1	91.1	70.4
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	1.04	1.02	121.9	119.6	116.0	90.8
Oysters, shucked, standards	Norfolk	gal.	7.50	7.50	126.5	126.5	130.7	126.5
Processed, Frozen (Fish & Shellfish):					112.7	110.2	108.0	88.9
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.38	.40	96.3	100.1	100.1	98.8
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.33	.33	96.7	96.7	96.7	95.2
Ocean perch, lge., skins on, 1-lb. pkg.	Boston	lb.	.30	.32	106.1	110.4	115.7	99.9
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	1.03	.99	122.2	116.8	112.7	81.8
Canned Fishery Products:					120.1	122.1	122.1	110.5
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	28.50	28.50	124.2	124.2	124.2	122.0
Tuna, lt. meat, chunk, No. 1, 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	12.15	12.15	107.9	107.9	107.9	97.7
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	5.25	5.25	118.5	118.5	118.5	101.5
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	11.31	12.81	145.1	164.3	164.3	112.2

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/Beginning with January 1962 indexes, the reference base of 1947-49=100 was superseded by the new reference base of 1957-59=100.

3/Recomputed to be comparable to 1957-59=100 base indexes.

4/Because of an error, this index will be revised when the July 1962 index is released. Actual index is slightly lower than shown.

5/Not available.

Fresh Western halibut wholesale prices at New York City rose from May to June in spite of the seasonal landings in the Pacific Northwest. The demand for halibut was quite strong because frozen stocks at the beginning of the season were almost completely sold out. During the same period, prices were down for all other products under the drawn, dressed, or whole finfish subgroup and the index dropped 4.7 percent. Prices were down for fresh large haddock by 9.4 percent, fresh king salmon at New York City by 3.7 percent, Lake Superior whitefish at Chicago by 2.8 percent, and Lake Michigan yellow pike at New York City by 36.6 percent. Salmon supplies in June were moderate, the demand continued good, but the market was not as steady as in May. Heavier seasonal landings of Great Lakes yellow pike were responsible for the price drop in that product. The market for Great Lakes whitefish although still relatively strong in June was not at the same level as in May. Compared with June 1961, the subgroup index this June was up 7.1 percent because of higher prices for fresh and frozen halibut, large and medium king salmon, and Lake Superior whitefish. These increases were somewhat offset by lower prices for fresh drawn haddock and fresh yellow pike.

From May to June, fresh haddock fillet prices at Boston were down 4.5 percent. With continued light landings in the South Atlantic States, fresh shrimp prices at New York City rose 1.9 percent during the same period. As a result, the processed fresh fish and shellfish index for June was somewhat lower than the May index. The subgroup index this June

was up substantially as compared with the same month in 1961 because of higher prices for fresh shrimp (up 34.3 percent) and fresh haddock fillets (up 13.8 percent).

The price index for processed frozen fish and shellfish in June 1962 was up 2.3 percent from the previous month and 26.8 percent higher than a year earlier only because of higher frozen shrimp prices at Chicago. Continued light supplies in June caused a price advance for frozen shrimp of 4.6 percent from the previous month and of 49.4 percent from June 1961. Prices for frozen fillets of haddock did not change from May to June, but were down 3.8 percent for flounder fillets and 3.9 percent for ocean perch fillets. Compared to June 1961, prices were up for haddock and ocean perch fillets, and down for flounder fillets.

The June index for the canned fishery products subgroup was down 1.6 percent from May, but was up 8.7 percent as compared with June 1961. Of the items in the subgroup, the only change from May to June was for canned Maine sardines--prices dropped 11.7 percent. The new pack of Maine sardines early in June was substantially greater than the previous season and prices, which had been abnormally high because of short supplies, returned to more normal levels. Compared with June 1961, prices this June were up 1.8 percent for canned pink salmon, 10.4 percent for canned tuna, 16.7 percent for California sardines, and 29.3 percent for Maine sardines.



BY HAND

This term means the gathering or collecting of fish or shellfish without the aid of any tools or equipment. This includes skin diving with a snorkel tube, "treading" of clams (feeling for the clams with the feet and lifting them from the bottom with one foot), and "signing" (locating clams by their syphon holes and digging them out by hand).



Gathering by hand.

Note: Excerpt from Circular 109, Commercial Fishing Gear of the United States, for sale from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., single copy, 40 cents.



International

FOOD AND AGRICULTURE ORGANIZATION

PROGRAM TO PROMOTE USE OF FISH PROTEIN CONCENTRATES FOR HUMAN CONSUMPTION:

A program to promote the use of fish protein concentrate or fish flour for human consumption has been announced by the Food and Agriculture Organization Fisheries Division.



Fish protein concentrates of appropriate quality would be extremely effective in meeting serious protein deficiencies in many areas of the world and...raw materials to produce such concentrates are available in abundance in certain areas.

FAO, in consultation with other U. S. specialized agencies and with various experts in this field, has drawn up minimum specifications for fish protein concentrates which would be suitable for human consumption and has also been assembling the latest available information on suitable types of equipment and processes.

However, it is recognized that the information concerning equipment and processes and concerning the results of various experiments in different parts of the world is still not yet complete.

FAO's Fisheries Division has prepared a paper, entitled "Note on a Proposal to Manufacture Fish Protein Concentrates in Peru." This note deals with minimum specifications for fish protein concentrates suitable for human consumption and also gives the latest available information on equipment and processes. The Division is also urgently seeking supplementary information on equipment and processes for manufacturing fish protein concentrates and on the results of experiments with this product.

Excerpts from the FAO paper follow:

1. Background: The use of fish protein concentrates for human consumption was discussed by the FAO International Meeting on Fish Meal, Rome, March 1961; by the FAO/UNICEF/WHO Protein Advisory Group, June 1961; by the FAO International Conference on Fish in Nutrition, Washington, September 1961; and in particular by a Panel of Experts convened by FAO in Washington in September 1961. This Panel made certain recommendations concerning the specifications which should be followed in the manufacture of such products and concerning areas in which campaigns to promote the consumption of such products would be likely to be most effective. Among the latter, priority was given to a campaign in Peru to be associated with the very large-scale production of fish meal which had developed in that country. Recommendations of the Panel were subsequently discussed in FAO and were also referred to the Second Annual Conference of the International Association of Fish Meal Manufacturers, Lisbon, October 1961. A tentative plan of operation for a project in Peru was drafted and thereafter discussed in detail with representatives of the Government, the Fish Meal Industry, and other interested agencies in Peru, by FAO staff members during a visit to Peru in December 1961. Discussions revealed a strong interest on the part of the Government of Peru in promoting such a campaign and on the part of the fish meal manufacturers in Peru in acquiring and operating the necessary equipment for the manufacture of fish protein concentrates in sufficient quantity to supply such a campaign and, later, the commercial demand for such products in Peru.

2. Fish Protein Concentrates--Characteristics and Specifications: In considering the manufacture of fish protein concentrates in powdered form, it is essential to recognize the typical characteristics of these products and what bearing these have on the equipment and processes to be used. For the purpose of these and similar projects, where the production of fish protein concentrates, as described in the tentative specifications, is envisaged as supplementary to the manufacture of fish meal, three types of product have been specified.

The specifications give the minimum requirements for each type. Type A is completely, or almost completely, deodorized and defatted; Type B is partly deodorized and defatted; and Type C is non-deodorized and non-defatted.

3. Existing Equipment and Processes for the Manufacture of Fish Protein Concentrates: The following is a summary of what is known to FAO concerning available equipment and processes used for the manufacture of fish protein concentrates in different countries. In this connection, it must be emphasized that the manufacture of Types A and B products from a

International (Contd.):

Type C product has so far been restricted to batch production on a small scale and that continuous type extraction plants have not yet been tested on fish.

(a) Types A and B Products

Two groups of processes can be distinguished:

- (i) Production of Types A and B in one stage directly from raw fish by azeotropic dehydration and lipid extraction with partial or complete deodorization. Fish protein concentrates of Type C cannot be manufactured by this method.
- (ii) Production of fish protein concentrates in two stages, the first of which consists in producing a concentrate of Type C. The second stage is a solvent extraction of Type C leading to a concentrate of Types A and B.

The solvents used in the various processes for making fish protein concentrate of Types A and B are ethanol, isopropanol, hexane, ethylacetate, acetone, and ethylene dichloride.

The solvents used may affect the wholesomeness of the product. They must be eliminated from the final product because of undesirable effects on taste and flavor. No toxic residues must be allowed to remain in the final product.

Good experiences are recorded with ethanol and isopropanol.

In most of the equipment to be used for manufacturing concentrates of Types A and B, various solvents can be utilized but trials have to be carried out before switching from one solvent to another.

The apparent merits and demerits of the various processes in relation to requirements in Peru are discussed below. The conclusion is that the information available is sufficient for the Peruvian Government and industry to come to a decision about the manufacture of Types A and B in Peru now, but that the selection of a specific process might be made dependent on further investigations and trials. If the decision is positive, these investigations and trials could take place concurrently with the first phase of the campaign for the introduction of fish protein concentrates into the diet of protein-deficient people in Peru, namely the development of suitable vehicles including testing for palatability. Meanwhile, FAO is now conducting widespread enquiries in order to supplement the analytical and operational information available at present.

(b) Type C Products

Subject to certain precautions and control with regard to the quality of the raw material and standards of hygiene during processing, these products can be manufactured in conventional fish meal equipment. The methods can again be divided into two groups:

- (i) Those where the raw material is dehydrated by direct heat (flame driers);
- (ii) Those where the raw material is dehydrated by indirect heat (indirect steam driers).

It is fully realized that satisfactory products might be produced by all the methods involved. In order to decide what type of process should be selected for Peru, it appears that the following points ought to be taken into account:

- (i) The process should be easily controllable and not need highly skilled operation.
- (ii) The equipment should be easily serviced and cleaned in order to meet the requirements necessary for food processing equipment.

4. Investigations Concerning the Manufacture of Fish Protein Concentrates: There is widespread interest on the part of the fishery industry, food technologists, and nutritionists in the development of equipment and processes for the manufacture of fish protein concentrates suitable for human consumption, and certain investigations now proceeding offer hope of success at a fairly early date.

5. Considerations Affecting the Proposed Project in Peru: During discussions between FAO and the fish meal manufacturers in Peru, the latter indicated their interest in an installation capable of producing 1,500 tons annually of fish protein concentrates of Types A, B, and C, without restriction below this limit of the capacity to produce any one of these types. It will be evident that in the circumstances described above, the manufacturers are faced with a number of alternatives which must be evaluated in terms of the commercial risks involved and the prospects for a profitable return on investments. These alternatives are described below, together with FAO's comments on the apparent advantages and disadvantages from the standpoint of technical, economic, and organizational considerations:

- (a) It is recognized that an annual production of 1,500 tons, such as is visualized by the fish meal manufacturers in Peru, is considerably in excess of the requirements of the projected campaign and that the surplus will be marketed together with fish meal for animal feeding. In view of this, and also since some Type C product will probably be required in any case (for the purpose of the campaign), it is assumed that the project in Peru will be based on the manufacture of a Type C product. The manufacture of Types A and B products will be based on processes involving the manufacture of a Type C product as a first stage (production in two stages).
- (b) With regard to the manufacture of a Type C product, it has been mentioned above that conventional fish meal equipment can be used for this purpose. It is a matter for the manufacturers to decide whether to install a new plant or to make available an existing plant for this purpose. In this connection, it is strongly recommended that whatever equipment is used, whether new or existing, the installation should be used exclusively for the manufacture of a Type C product and should be operated quite separately from other installations manufacturing products below the standards required for human consumption, with due regard for the control of raw material and standards of hygiene as mentioned above. The manufacturers of the fish protein concentrate should be carried out in a closed building.

International (Contd.):

(c) With regard to the manufacture of fish protein concentrates of Types A and B, continuous production processes have been used so far only for products other than fish, and on a scale much larger than that envisaged in Peru.

(d) For the manufacture of Types A and B products, therefore, the manufacturers could adopt one of the following alternatives:

- (i) A rotary drum batch process using a plant to be purchased and installed by the fish meal manufacturers.

Comment: The advantage would be that a Type B and perhaps A product could quickly be produced in sufficient quantities for the promotion campaign. During this period, it would be hoped that the results of various experiments and pilot operations would be available, on the basis of which the manufacturers could then be further advised. If, at a later stage, the manufacturers decided to replace the rotary drum process by a continuous process, this might be done without changing the solvent recovery unit which accounts for the greater part of the cost of the equipment.

- (ii) A pilot plant for continuous extraction set up and operated by interested manufacturers of equipment.

Comment: Manufacturers of equipment have already indicated interest in making pilot plants available in Peru or to make trials with anchoveta in their own countries. Production would be on a small scale, but would be adequate for gaining experience with the process and for supplying material for the early stages of the promotion campaign.

- (iii) An existing continuous extraction plant now being used in Peru for products other than fish.

Comment: The capacity would undoubtedly be much greater than that required for the manufacture of fish protein concentrates in Peru. The arrangement would depend on the willingness of a firm in Peru already operating a continuous extraction plant to make the plant available and to operate it under appropriate conditions, including the use of specified solvents and the exclusive use of the plant at given periods for the manufacture of fish protein concentrates.

- (iv) A full-scale continuous extraction plant purchased and installed to the specifications of the fish meal manufacturers.

Comment: FAO could not recommend the outright purchase of any particular full-scale continuous extraction plant and considers further trials and investigations essential. However, interested suppliers of equipment may be willing to make such a plant available on attractive terms. This would be subject to negotiation once it has been decided to proceed with the project.

(e) In general, for a plant in which fish protein concentrates of Types A, B, and C should be manufactured, the following characteristics should be given:

- (i) Operate only with fresh, wet fish of good quality.
- (ii) Be equipped in a fully sanitary manner, so as to qualify as a food processing installation.
- (iii) Store the fish protein concentrates in such a way that no spontaneous heating can occur (storage of the concentrates in bags of suitable material).

6. Conclusions: It is necessary first to decide, in principle, whether in the light of the information now available, the campaign outlined in the draft plan of operation should be undertaken. If this decision is positive, the fish meal manufacturers could go ahead with setting up a new, or using an available, plant for the production of fish protein concentrate of Type C. The manufacturers could either choose one of the alternatives listed under 5 (d) above or, if on closer examination there is not one which appears sufficiently attractive at once, defer for the moment the final decision concerning the process and equipment to be used in the manufacture of fish protein concentrates of Types A and B--see 3. (a). Supplies of these products could be obtained from other countries for the purpose of the early stages of the promotion campaign. This procedure would probably be effective in determining the requirements of the market.

As part of the project, FAO would make available the services of a suitably qualified food processing technologist, who would be ready to advise the industry on the choice of methods and equipment. He will have at his disposal a good deal of additional information on existing processes and equipment which FAO and other agencies are now assembling. Moreover, a number of pilot operations undertaken both by suppliers of equipment and by research institutes are at present in progress and well advanced. The FAO expert will keep in close touch with these pilot operations. By the time preparations for the acceptability trials are complete, vehicles for the introduction of fish protein concentrates into the diet of protein-deficient people have been developed and palatability trials have been carried out, it is likely that considerably more will be known about the various processes for the manufacture of Types A and B, so that, if the decision of the choice of equipment is deferred, it could then probably be taken with a good deal of confidence.

* * * * *

WORLD MEETING ON TUNA BIOLOGY:

Some 250 scientists from 25 nations were expected to gather at La Jolla, Calif., July 2-14, 1962, for a World Scientific Meeting on the Biology of Tunas and Related Species. The meeting was sponsored by the Food and Agriculture Organization (FAO). The United States Government was official host.

Its purpose was to launch first steps toward establishing the world-wide cooperation

International (Contd.):

necessary to clear up some of the unknown factors surrounding the fish, its behavior, migratory habits, how much is caught and how much could be caught, and the differences between the various species of tuna.

Though man has fished tuna for thousands of years, a great many questions remain unanswered about the fish. FAO officials say that fish biologists around the world agree that these questions must be answered if further progress is to be made in tuna fishing.

While this meeting was concerned primarily with the biology of tunas, its results should be of great interest to all tuna-fishing nations.

World tuna landings have more than tripled since the end of the Second World War, FAO's most recent fisheries yearbook shows. Just over 500 million pounds were landed in 1948. By 1961 landings had climbed to about 2,000 million pounds.

Japan and the United States, in that order, dominate commercial tuna fishing, accounting between them for more than 90 percent of the world catch. Other important tuna fishing nations are Peru, France, and Spain.

Interest in new developments in tuna fishing is not limited to just a handful of nations, however. Almost every maritime country bordering tropical and temperate waters conducts at least some tuna fishing and in many the industry is rapidly growing.

FAO fishing experts expected the La Jolla meeting would be an important first step toward answering some of the still-unanswered questions about the tuna, in stimulating further research, and in working out international cooperation for the most intelligent exploitation and conservation of the world's tuna resources.

* * * * *

INTERIOR OFFICIAL HEADED UNITED STATES DELEGATION:

The United States delegation to the World Scientific Meeting on the Biology of Tunas and Related Species, sponsored by the Food and Agriculture Organization of the United Nations, was headed by Donald L. McKernan, Director of the Fish and Wildlife Service's Bureau of Commercial Fisheries. The United States was host for the conference, July 2 to 14, at the Art Center in La Jolla, Calif.

Following success of the World Scientific Meeting on the Biology of Sardines and Related Species in September 1959, in Rome, Italy, the value of holding expert meetings on various species of fishes was recognized. The convening of this meeting on the biology of the tuna and related species was approved at the Eleventh Session of the FAO Conference in Rome in November 1961.

The World Tuna Meeting brought together about 250 scientists from 15 to 20 governments and private institutions engaged in studying the identity, distribution, behavior, and potential yields of stocks of tunas.

The objectives of the La Jolla meeting were to appraise known scientific factors, gaps in knowledge, theories and concepts, and methods and equipment, and to consider and recommend future lines of endeavor, national and international, in the study of the biology of world tuna resources.

The tuna--yellowfin, skipjack, albacore, bluefin, and little tuna--and the tunalike fish, bonito and yellowtail, roam the oceans; they know no geographical boundaries. As late as the turn of this century, tuna had little or no commercial value. They were not considered edible, and fishermen who found them on their lines usually threw them back into the sea.

Then, in 1903, the Pacific sardine failed to appear in the San Pedro, Calif., area. One packer, in an effort to keep his cannery operating, canned 700 cases of tuna and distributed them to wholesalers. Repeat orders were received, and the fishery grew rapidly. The tuna are now one of the leading fishery resources of the United States, as well as of many other nations whose tuna fisheries continue to advance. FAO statistics for 1960 show a world catch of about two million tons of tuna, bonito, mackerel, and their relatives. Almost half this catch was true tuna.

Canned tuna now is a familiar item in almost every American home and on every grocer's shelf. It is economical, nutritionally excellent because of its animal protein of superior quality along with its valuable vitamins and minerals, easy to prepare, and universal in taste appeal. Because of its versatility, it is probably the most frequently served canned fish in the United States, appearing in an infinite variety of tuna salads, tuna chowders, tuna casseroles, tuna pot pies, tuna and egg scramble, tuna a la king, tuna sandwiches, and in other dishes with an international flavor like tuna foo yung, tuna a la Stroganoff, and tuna pizza.

The Department of the Interior reported that the recent and rapid development of tuna fisheries throughout the world has emphasized the need for tuna research workers to meet and discuss the biological and oceanographic research programs now being conducted, and to consider the coordination of their work. New methods of fishing and high prices are increasing the danger of overfishing, particularly of the yellowfin stocks. Serious consideration must be given to such matters.

The World Tuna Meeting was conducted in the three official languages of FAO--English, French, and Spanish. The Japanese provided their own interpreters with some help from the United States.

McKernan's alternates to the meeting were Dr. O. E. Sette, Director of the Bureau of Commercial Fisheries Biological Laboratory at Stanford, Calif., and Vernon E. Brock, Director of the Bureau's Biological Laboratory, Washington, D. C. Other members of the United States delegation included Dr. Roger Revelle, Science Advisor to the Secretary of the Interior; Stuart Blow, Office of Special Assistant for Fisheries and Wildlife, Department of State, and several other officials of the Bureau of Commercial Fisheries, as governmental advisers. The nongovernmental advisers included Dr. F. N. Spiess, Acting Director of the Scripps Institution of Oceanography, La Jolla, Calif., Dr. Richard Van Cleave, Dean, College of Fisheries, University of Washington, Seattle; Sigurd J. Westrheim of the Oregon Fish Commission; and Phil M. Roedel of the California Department of Fish and Game.

Preparatory arrangements for this important world meeting were handled by a subcommittee appointed by

International (Contd.):

the United States FAO Interagency Committee. Dr. J. L. McHugh, Chief of the Division of Biological Research, Bureau of Commercial Fisheries, was chairman.

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INTERIOR UNDER SECRETARY CARR DELIVERED KEYNOTE ADDRESS:

Under Secretary James K. Carr of the U. S. Department of the Interior delivered the keynote address at the opening session of the 13-day United Nations' Food and Agriculture Organization World Scientific Meeting on the Biology of Tunas and Related Species, July 2, 1962, at the Art Center in La Jolla, Calif.

Other speakers at the opening session of the meeting were William E. Warne, Director, Department of Water Resources, State of California, and Dr. D. B. Finn, Director, Fisheries Division, FAO, Rome, Italy. Mayor Charles Dail of San Diego, Calif., welcomed the conferees and distinguished guests.

The World Tuna Meeting is a major event in the history of scientific fishery research. About 200 to 250 scientists from 15 to 20 governments and private institutions engaged in studying tuna participated in the conference. The biological and oceanographic research programs now being conducted, often independently, by the many nations with important tuna fisheries were discussed, and consideration was given to coordination of such work.

EUROPEAN ECONOMIC COMMUNITY

FISHERIES POLICY CONFERENCE PROPOSED FOR EUROPE:

Immediate talks on a common fisheries policy between European Free Trade Association (EFTA) members Norway, Denmark, and Great Britain, and the European Economic Community (EEC) were proposed by the vice-president of the EEC Commission. These conferences would be independent of the current negotiations of the three countries for EEC membership.

He declared that, in view of the fact that Great Britain, Norway, and Denmark together produce substantially more fish than the present Common Market countries, their entry into the EEC would be of greater significance to the fisheries industry than the drafting of a common policy within the Six--a matter

which the EEC has not yet undertaken. It would be impossible, he said, for the EEC countries to formulate a meaningful fisheries policy without prior consultation with the three EFTA countries, which fish the same North Sea waters.

Speaking earlier on the same subject, the Danish Minister for Fisheries said that he looked forward to talks with the EEC on fisheries problems. The interests of Denmark, Norway, and Great Britain, he said, were so dissimilar to those of the Common Market countries that it would be necessary to review the whole complex situation. He said that it would be of genuine value for Denmark if liberalization of the trade in fish and fish products could be achieved in Western Europe.

The fish catch for all the EFTA countries including Finland, was 3.85 million metric tons in 1959, of which Denmark, Norway, and the United Kingdom accounted for 3.36 million. That of the EEC members was 1.95 million metric tons. Among individual countries, Norway led with 1.61 million, followed by the United Kingdom, with 989,000; West Germany, 765,000; Denmark, 761,000; and France, 511,000. (EFTA Reporter, May 29, 1962.)

EUROPEAN FREE TRADE ASSOCIATION

ANOTHER TEN PERCENT TARIFF CUT ANNOUNCED:

The European Free Trade Association (EFTA) Ministerial Council met in Copenhagen June 21-22, 1962, and decided to slash tariffs among its members a further 10 percent. This cut will bring intra-EFTA tariffs down to half what they were when the organization was launched two years ago. The action marked a further vigorous acceleration in tariff-cutting; according to the Stockholm Convention, EFTA's charter, the half-way mark was to be reached January 1, 1965¹.



The new 10 percent cut will be implemented by Denmark, Portugal, Sweden, Switzerland, and the United Kingdom on October 31, 1962. Austria will make the reduction not later than December 31, 1962, and Norway not later than April 30, 1963.

The first meeting of the Finland-EFTA Council took place on June 22. The Finnish ¹Under the previous accelerated program of tariff cuts. Most EFTA countries had reduced tariffs among themselves by 40 percent on March 1 (and all were to do so by September 1)--a level which, according to the Stockholm Convention, was to have been reached not later than July 1, 1963.

International (Contd.):

representative stated that he would bring the question of the further 10 percent tariff cut before his Government with a view to its participation in the decision.

The EFTA Secretary General gave two reasons for the accelerated tariff cut.

"First, to do so is a good thing in itself. It is sensible to proceed toward the abolition of tariffs within EFTA, thus creating our own common market as rapidly as possible. The present economic climate is highly advantageous for such a move.

"The second reason is that, from the very beginning, we have had as a major objective keeping in step with the European Economic Community (EEC). We devised our own timetable in the Stockholm Convention as nearly as we could to follow the time-table of the Treaty of Rome and we have, whenever the EEC has modified its program, made a similar modification in ours."

Note: See Commercial Fisheries Review, April 1962 p. 41.

FISH OILS

WORLD EXPORTS ESTABLISHED
RECORD IN 1961:

World gross exports of fish oils (including fish-liver oils) reached a record 344,000 short tons in 1961, reflecting the phenomenal expansion of fish oil shipments from Peru. World exports increased by 27,400 tons from the previous high of 1960 and were almost two-thirds higher than the 1955-59 average.

Peru, the United States, Iceland, the South Africa Republic, and Portugal are the most important world suppliers of fish oil, accounting for over 90 percent of the world's net exports and over 60 percent of the world's gross exports of fish oil in 1961. Although several European countries export sizable quantities of fish oil, the area as a whole is a net importer, and is the world's major market for fish oil. The Netherlands, Denmark, and West Germany import large quantities of fish oil for further processing and export largely to other European countries.

Peru has become the world's leading exporter of fish oil. Total exports reached a record 112,772 tons in 1961, almost three times 1960 exports. Apart from Portugal, exports from the other major exporting countries declined slightly in 1961. Norway's reported exports of fish oil were up slightly in 1961, but are probably much larger than indicated owing to the exclusion of hardened fish oils which are not classified separately in trade statistics.

World exports in 1962 will probably continue upward but possibly at a lower rate than in the preceding 3 years owing to the fear of overexpansion in production and weak prices. Exports from the United States and Iceland probably will increase on account of the fairly large carry-over stocks held at the end of 1961.

World Gross Exports of Fish Oil (Including Fish-Liver Oils) 1/, Average 1955-59, Annual 1958-61					
Continent and Country	2/1961	1960	1959	1958	Average 1955-59
	. . . . . (1,000 Short Tons)				
North America:					
Canada	4.1	14.8	14.4	5.8	8.3
Mexico	0.8	3/	0.7	0.7	0.7
United States	61.2	71.8	72.2	47.0	64.1
Total	66.1	86.6	87.3	53.5	73.1
South America:					
Argentina	0.2	0.7	0.3	0.5	0.3
Chile	3.2	6.6	0.1	-	4/0.1
Peru	112.8	38.6	18.9	1.8	5.5
Total	116.2	45.9	19.3	2.3	5.9
Europe:					
Denmark	10.5	7.4	16.1	12.6	12.5
France	2.7	2.4	1.6	0.4	1.1
Germany, West	25.3	26.2	31.6	17.9	17.9
Iceland	35.0	53.7	18.9	27.4	21.1
Netherlands 5/.	5.4	7.8	16.0	13.0	10.4
Norway	24.0	18.4	21.8	19.8	21.3
Portugal	7.4	5.2	6.3	5.8	5.5
Sweden	3.4	2.5	3.0	2.0	2.5
United Kingdom	3.2	3.7	3.7	3.6	3.8
Other (incl. U.S.S.R.) 6/	2.4	1.8	2.4	1.5	1.2
Total	119.3	129.1	121.4	104.0	97.3
Africa:					
Angola	3.1	7.3	5.6	9.4	8.1
Morocco	5.2	5.7	4.3	4.5	2.7
South Africa Republic	30.5	36.5	26.0	18.1	14.9
Total	38.8	49.5	35.9	32.0	25.7
Asia and Oceania:					
Japan	2.7	3.8	3.6	6.6	5.8
Other 6/	0.9	1.0	1.7	1.2	1.7
Total	3.6	4.8	5.3	7.8	7.5
World Total	344.0	315.9	269.2	199.6	209.5
1/Hardened fish oils have been included wherever separately classified in export statistics.					
2/Preliminary.					
3/Under 50 tons.					
4/1959 only.					
5/May include some whale oil prior to 1960.					
6/Includes estimates for minor exporting countries.					
Source: Foreign Crops and Markets, June 28, 1962, U. S. Department of Agriculture.					

INTERNATIONAL NORTHWEST PACIFIC
FISHERIES COMMISSIONSOVIET-JAPANESE SALMON
CATCHES, 1956-1961:

While Japanese salmon catches in the Treaty area have been controlled through catch quotas negotiated between Japan and U. S. S. R., Japanese fishing pressure in the non-Treaty area has been maintained at a high level. But there has been a steady de-

North Pacific Salmon Catches by Japan and U.S.S.R., 1956-1961					
Year	Japan			U.S.S.R.	Grand Total
	Treaty Area	Non-Treaty Area ¹	Total		
	(1,000 Metric Tons)				
1961	64.9	80.7	145.6	79.7	225.3
1960	66.6	80.2	146.8	69.5	216.3
1959	85.1	94.0	179.1	94.1	273.2
1958	110.1	86.4	196.5	73.0	269.5
1957	121.1	60.4	181.5	150.0	331.5
1956	100.9	49.4	150.3	165.7	316.0
1/Area south of 45° N. latitude off Eastern Hokkaido.					

International (Contd.):

cline in both Japanese and Soviet salmon catches during the past few years. (Suisan Keizai Shimbun, February 11, 1962.)

INTERNATIONAL NORTH PACIFIC
FISHERIES COMMISSIONCOMMITTEE ON BIOLOGY AND
RESEARCH MEETS IN TOKYO:

The working party on offshore distribution of salmon and the working party on oceanography of the subarctic waters of the North Pacific of the Committee on Biology and Research of the International North Pacific Fisheries Commission, met in Tokyo, Japan, May 28-June 30, 1962. A U. S. Bureau of Commercial Fisheries scientist was a member of each working party.

At its 1959 and 1960 meetings, the Commission adopted recommendations of its Committee on Biology and Research with the objective of joint reporting of appropriate phases of the salmon research program and the eventual joint reporting of the results of the research program as a whole. In 1961, the Committee developed several recommendations as to the preparation of a comprehensive report on the origin, distribution, abundance, and intermingling of the continental stocks of Pacific salmon on the high seas. The purpose of the meetings of the two working parties, which met concurrently, was to expedite the final preparation of Chapters V and VI of that report, dealing respectively with the two subjects.

(NORTH EUROPEAN)
INTERNATIONAL FISHERIES CONVENTION OF 1946TENTH MEETING OF THE
PERMANENT COMMISSION:

The Tenth Meeting of the Permanent Commission of the International Fisheries Convention of 1946 was held in Hamburg, West Germany, May 8-11, 1962. Delegations attended from all 14 of the Member Governments (Belgium, Denmark, the Federal Republic of Germany, France, Iceland, Ireland, Netherlands, Norway, Poland, Portugal, Spain, Sweden, U.S.S.R., and United Kingdom). Observers represented the United States, the International Council for the Exploration of the Sea, the International Commission for the Northwest Atlantic Fisheries, and the Food and Agriculture Organization.

The Commission agreed that for an experimental period of 3 years from June 1,

1963, the use of nets with meshes between 50 mm. (almost 2 inches) and the Convention minima should be prohibited in and around the North Sea. The Commission further agreed to increase the minimum size of whiting from 20 to 23 cm. (7.9-9.1 inches) from the same date and to extend to June 1, 1966, the rule permitting the landing from mixed fisheries of a proportion of undersize protected fish for industrial purposes. Permission for the use of small-mesh nets in the whiting fishery in the Skagerak and Kattegat was extended until May 31, 1964. The Commission also resolved to request member governments to take all practicable steps to ensure that small-mesh nets are used solely for unprotected fish.

The Commission expressed their concern at the state of the fish stocks in the northern part of the Convention area, and resolved to request member governments to facilitate the introduction of further conservation measures as soon as possible.

The Commission agreed to extend the present permission for the use of top-side chafers until June 1, 1963. They also expressed desire to prevent the use of those types of chafers which reduce the selectivity of nets, and their intention to review the position at their 1963 meeting.

The Commission agreed to increase the minimum sizes of cod and haddock to 34 cm. (13.4 inches) and 31 cm. (12.2 inches), respectively, in all waters in which at any time a minimum size of mesh of nets of 120 mm. (4.7 inches) is specified.

The Commission agreed to extend until June 1, 1964, the operation of the minimum size of mesh of nets of 75 mm. (almost 3 inches) in the southern part of the Convention area.

The Commission expressed its appreciation of the valuable contributions that were being made by the International Council for the Exploration of the Sea to their work. (News release dated May 12, 1962, from the Office of the Permanent Commission, London.)

NORTHWEST ATLANTIC FISHERIES COMMISSION

COMMISSION MEETS IN MOSCOW:

The 12th Annual Meeting of the Commission for the Northwest Atlantic Fisheries was held in Moscow, U.S.S.R., June 4-9, 1962. The meeting was attended by a delegation of

International (Contd.):

United States Commissioners, and Government and industry advisers.

The Commission is concerned with the investigation, protection, and conservation of the fisheries of the Northwest Atlantic Ocean, in order to make possible the maintenance of a maximum sustained catch from those fisheries. The United States Delegation was particularly concerned at this meeting with (a) consideration of member governments' annual returns showing inspections carried out, (b) reconsideration of the minimum mesh size regulations for various areas in the Northwest Atlantic, and (c) the establishment of an international inspection system for North Atlantic trawlers.



Actions and discussions by the Commission of interest to the New England fishing industry were:

1. The Soviets requested and were admitted to Panels 4 and 5.
2. Sea herring were recognized as a species to be considered in Subarea 5.
3. An increase in the ring size for scallop gear was discussed. It was pointed out that delaying the time of harvest by one year would increase the short-term yield by 10-20 percent. However, because of the fishing mechanics of the gear, it has been determined that minor increases in ring size accomplishes little and experiments have not yet been conducted to determine the ring size necessary to achieve an increase in the yield of meats. The scientists were instructed to continue the studies.
4. The possibilities of establishing a minimum trawl mesh size for the bottom fisheries on species other than haddock and cod were discussed. It was felt that this would be desirable, but there was insufficient data concerning the effect of various mesh sizes on the different species and fisheries. The scientists were directed to continue studies on this matter.

5. The Commission made no recommendations for changes in fishing regulations in any of the ICNAF areas.

6. The matter of international or cooperative enforcement of ICNAF regulations was considered. It was recognized that the mechanics of such an operation would be complicated. It was felt that if such an enforcement program were to be recommended by the Commission, it would best be done by means of the enforcement facilities of the member countries. It was decided to continue the study of this matter along these lines and bring it up again for discussion at the next annual meeting of the Commission, which will be held in Halifax, Nova Scotia.

A group from the United States delegation attending the Commission meeting met informally with members of the U.S.S.R. delegation to discuss reported operating difficulties experienced by United States fishing vessels in areas where vessels of both nations fished in the North Atlantic. Both groups urged that all fishermen of all nations review and study the Rules of the Sea as applied to fishing vessels, and to put them into practice.

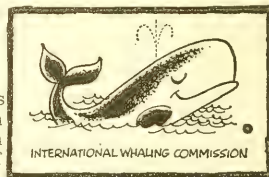
To further promote cooperation between the fishing vessels of both nations, starting in the spring of 1963 fishing vessels of the U.S.S.R. will place a radar reflector buoy at the tail or far end of the drift gill nets which are used for catching herring. It was agreed at the meeting, that observance of the Rules of the Sea, and a common respect for a neighbor fisherman would help eliminate any future problems of that type.

It was agreed that a joint publicity campaign be started to further instruct the fishermen of both nations upon the Rules of the Sea and good fishing practices.

INTERNATIONAL WHALING COMMISSION

AD HOC SCIENTIFIC COMMITTEE MEETING:

The Ad Hoc Scientific Committee of the International Whaling Commission met in London June 25-29, 1962. The Committee met one week before the Fourteenth Meeting of the International Whaling Commission to prepare a report on the conditions of the Antarctic whale stocks in connection with new regulations on limitations of whales to be taken from the Antarctic stocks during the next whaling season. The Committee's action was



International (Contd.):

considered by the Commission which convened at London on July 2, 1962.

ANNUAL MEETING OF COMMISSION:

The United States delegation at the Commission's Fourteenth Annual Meeting consisted of J. Laurence McHugh, United States Deputy Commissioner, International Whaling Commission, and Dale W. Rice of the U. S. Bureau of Commercial Fisheries Marine Mammal Laboratory, Seattle, Wash.

A major agenda item was the setting of an over-all quota (based on blue-whale units) for the Antarctic whale catch for a four-year period ending with the 1965/66 season.

In 1960 the Commission established a three-man committee composed of one each from the United States, Canada, and the Food and Agriculture Organization (FAO) to study the condition of the Antarctic whale resources and to recommend for the Commission's consideration the number of whales that could be safely taken without injury to the resource. The percentage shares of the total quota, which the Commission will set, are as follows: Japan, 33; Norway, 32; U.S.S.R., 20; United Kingdom, 9; and the Netherlands, 6 percent.

According to early press reports, Britain and the Netherlands were expected to table a proposal calling for a reduced catch quota of less than 15,000 blue-whale units for each year of the four-year period. Two reasons for the reduction are cited: (1) to conserve the resource; and (2) to stabilize the market for baleen whale oil.

Baleen whale oil is used primarily for making margarine. Baleen prices have dropped from an average price of (\$194 per long ton in 1960, to \$167 in 1961 and \$125 in 1962 because fish oils, which are cheaper to produce, are now being used in the manufacture of margarine. (United States Embassy, Tokyo, June 29, 1962.)

ORGANIZATION FOR ECONOMIC
COOPERATION AND DEVELOPMENT

FISHERIES COMMITTEE MEETING:

The fourth session of the Fisheries Committee of the Organization for Economic Cooperation and Development (OECD) was held

in Paris, France, July 9-10, 1962. H. E. Crowther, Assistant Director, U. S. Bureau of Commercial Fisheries, attended the meeting. He also traveled to Brussels, Belgium, to contact officials of the European Economic Community (Common Market). A. W. Anderson, Regional Fisheries Attache for Europe, attended the OECD fisheries meeting in his capacity as permanent United States representative on the Fisheries Committee.

The agenda for the Fisheries Committee meeting included consideration of the OECD work program for fisheries. The program for 1962 is largely a continuation of several unfinished projects started under the former Organization for European Economic Cooperation (OEEC). The new program sets the direction for activities and work projects in the OECD fisheries sector during 1963 and in subsequent years.

OECD actions take on special significance for the United States fishing industry when it is considered that members of this organization account for one-third of the world's total fish production, about 80 percent of world imports of fishery products, and 56 percent of world exports. Among the 20 member countries are the United States, Canada, the six members of the European Common Market, the United Kingdom, Denmark, and Norway.

In Brussels, Crowther conferred with representatives of the European Economic Community principally on matters concerning a common fisheries policy for member countries.

INTERNATIONAL INSTITUTE OF REFRIGERATION

INTERNATIONAL CONGRESS OF
REFRIGERATION TO BE HELD IN MUNICH:

The eleventh International Congress of Refrigeration will be held at Munich, West Germany, August 27-September 4, 1963. The Congress is under the auspices of The International Institute of Refrigeration.



The Congress will convene with a General Meeting, followed by three Plenary Sessions covering a number of main subjects, among which are included: (1) Freeze-Drying; (2) Time-Temperature Tolerance, and (3) Energy for Refrigeration in Coming Years.

The Technical Commissions of the Institute selected various special subjects for dis-

International (Contd.):

cussion at the Congress, which include the following:

1. Chemical and physical methods for measuring the quality of foods.
2. Biochemical changes in fresh and frozen meat, poultry and fish; their chilling before freezing.
3. Chilling and cooling down of foods, and heat transfer.
4. Extraction of fresh water from sea or brackish water.
5. Freeze-drying, theory, industrial developments, use in foods, and future prospects.
6. Refrigeration of fishing boats.
7. Application of hermetic compressors to marine refrigeration.

The official languages of the Congress are English and French.

OCEANOGRAPHY

TROPICAL ATLANTIC INVESTIGATION:

The first Working Group of the Intergovernmental Oceanographic Commission met in Washington at the National Oceanographic Data Center June 20-22 to draw up plans for an International Cooperative Investigation of the tropical Atlantic which will begin in February 1963. Such an international cooperative project in synoptic oceanography is a bold new venture in the field of oceanography, and its successful completion will require participation of ships and scientists from many nations. In a synoptic survey simultaneous instrument readings are taken from a number of ships to give what one might consider as a photograph of the surface and subsurface conditions of the ocean. Ships from eight nations and scientists from additional nations are expected to participate in the project, which will be the first international cooperative effort initiated under the auspices of the Intergovernmental Oceanographic Commission. The Commission was formed within UNESCO and held its first session in October 1961 in Paris. The United States called this first working group together under a resolution adopted by the Commission authorizing member govern-

ments to convene working groups to draw up comprehensive plans for such cooperative oceanographic undertakings.

The Working Group, under the Chairmanship of Dr. Arthur E. Maxwell of the Office of Naval Research, drew up plans for a multi-ship synoptic oceanographic investigation in the tropical Atlantic from South America to Africa. The fisheries investigation in the Gulf of Guinea under the Commission for Technical Cooperation in Africa will be part of the over-all project. The United States Agency for International Development is planning to finance part of this fisheries investigation.

The United States will contribute seven ships to the investigation, representing the Bureau of Commercial Fisheries, Coast and Geodetic Survey, Woods Hole Oceanographic Institution, Texas A & M, and the Lamont Geological Observatory. Two fisheries research vessels and a large oceanographic vessel from the U.S.S.R. will participate. Other ships will be from Argentina, Brazil, France, Ivory Coast, Nigeria, and the (former French) Congo.

Other representatives or observers present at the meeting were from Canada, Chile, China, Germany, Italy, Korea, Morocco, Sierre Leone, Spain, Uruguay, and the Food and Agriculture Organization of the U. N.

The Working Group recommended that each participating member country name a representative to a Coordination Group, which will nominate an International Coordinator of the project to the next Commission meeting in September.



Angola

JAPANESE COMPANY PLANS TO ESTABLISH FISHING BASE:

A large Japanese fishing company is planning to establish a joint fishing base at Luanda, Angola, with an Angolan company. Plans call for freezing and processing bottomfish at the base, as well as operating a fish meal plant. To make final arrangements for this joint venture, the president of the Japanese firm departed Japan for Luanda on June 17.

The Japanese firm involved operated the fish meal factoryship Renshin Maru (14,094

Angola (Contd.):

gross tons) in Angolan waters for the first time in the fall of 1961. The company had pioneered fish meal operations in the Bering Sea but now hopes to rely less on its Bering Sea operations for fish meal production, since they are becoming less profitable due to the increase in fish meal factoryships and bottomfish fleets operating in that area.

The same Japanese firm is also studying possibilities of entering into agreements with a Danish firm and a United States firm, whereby the three firms would jointly engage in the production and marketing of freeze-dried products. According to present plans, the Danish company would furnish the machines, the Japanese firm would provide the fishermen and vessels, and process the catch, and the United States company would market the products. Four units of the Danish firm's vacuum freezing and drying machines would be installed on the Japanese firm's factoryship, which would initially process shrimp and crab meat. The president of the Japanese firm was scheduled to meet with the heads of the Danish and United States firms at Chicago around July 2, for preliminary discussions of this joint venture. (Suisan Tsushin, June 18, 1962.)



Argentina

LANDINGS OF FISH AND SHELLFISH, 1960-61:

Argentina's marine landings of fish and shellfish in 1961 were 9.2 percent below the 1960 landings. The decline was entirely in finfish landings which dropped 8,541 metric tons from the previous year. The 1961 shellfish landings were 741 metric tons more than in 1960.

The principal marine species of fish caught in Argentina was hake--34,426 metric tons in 1961 and 36,095 metric tons in 1960. Mackerel and anchovy were the other principal species. Less of those two species were landed in 1961 than the previous year. Mackerel landings in 1961 dropped 26.9 percent from 1960.

The principal shellfish products landed in 1961 were mussels and shrimp. Mussels were up 17 percent from 1960, and landings

of small shrimp were more than double those in 1960.

Table 1 - Argentine Marine Landings of Fish and Shellfish by Fishery Zones, 1960-61

Zone	1961	1960
... (Metric Tons) ...		
Fish:		
High seas	37,677.9	39,867.6
Coastal Zones:		
Bahia Blanca	1,189.1	1,183.4
Quequen, Necoches	2,173.9	3,024.6
Mar del Plata	28,223.1	34,637.4
Rawson	215.5	364.0
San Antonio Oeste	109.7	162.6
San Blas, Patagones	407.8	157.6
Tres Arroyos	395.6	154.2
All other zones ^{1/}	273.0	236.0
Total Fish	70,665.6	79,207.4
Shellfish:		
High seas	315.6	565.9
Coastal Zones:		
Bahia Blanca	237.6	302.1
Quequen, Necoches	4,961.7	4,189.8
Mar del Plata	612.2	229.0
Rawson	320.1	312.1
San Antonio Oeste	157.5	163.3
All other zones ^{1/}	98.8	190.4
Total Shellfish	6,703.5	5,952.6
Grand Total	77,369.1	85,160.0

^{1/}Includes Comodoro Rivadavia, Gral. Madariaga, Puerto Madariaga, Puerto Madryn, Puerto Deseado, Rio Gallegos, Rio Grande, San Julian, Santa Cruz, etc.

Table 2 - Argentine Marine Landings of Fish and Shellfish by Species, 1960-61

Species	1961	1960
... (Metric Tons) ...		
Fish:		
Anchovy	10,668.8	11,177.6
Sea bream (besugo)	1,293.0	1,534.2
Mackerel and mackerel-like ^{1/}	12,361.1	16,900.4
Conger eel (corvina)	1,292.2	1,398.1
Hake (<i>Merluccius hubbsi</i>)	34,425.9	36,094.6
Tuna	1,657.3	1,860.2
Other fish	8,967.3	10,241.3
Total Fish	70,665.6	79,207.4
Shellfish:		
Shrimp, small	690.7	288.6
Shrimp, large ("langostinos")	323.7	359.4
Mussels	5,013.1	4,284.9
Other shellfish	676.0	1,019.7
Total Shellfish	6,703.5	5,952.6
Total Fish and Shellfish	77,369.1	85,160.0

^{1/}Includes caballa, cornalito, and pejerrey.
Source: Boletín Mensual de Estadística, Febrero de 1962; República Argentina, Poder Ejecutivo Nacional, Secretaría de Estado de Hacienda, Dirección Nacional de Estadística Y Censos.

Table 3 - Argentine Marine and Fresh-Water Fishery Landings, 1960-61

Type of Fishery	1961	1960
... (Metric Tons) ...		
Marine fish and shellfish	77,369.1	85,160.0
Fresh-Water Fish:		
Food	4,631.0	7,018.9
Industrial use ^{1/}	4,897.5	7,865.1
Total Fresh-Water Fish	9,528.5	14,884.0
Total Marine and Fresh-Water Fish	86,897.6	100,044.0

^{1/}Consists of "sabalo" (*Prochilodus platensis*), related to shad.

Argentina's total marine and fresh-water fish landings in 1961 decreased 13.1 percent

Argentina (Contd.):

from 1960. Landings from the Argentine River and lake fisheries both for food and industrial use were down substantially in 1961.

Note: *Boletín Mensual de Estadística*, February 1962, Dirección Nacional de Estadística y Censos



Australia

TUNA RESEARCH TO BE EXPANDED:

The Division of Fisheries and Oceanography of the Australian CSIRO is concentrating its fisheries research on a limited number of species; principally tuna, spiny lobster or crayfish, Australian salmon (a type of trout), and whales.

In connection with tuna research, it is proposed to have one officer based on Cronulla studying tuna distribution and behavior, another in Victoria investigating reproduction and recruitment, a third in South Australia looking into nutrition, and a fourth, who might be in West Australia, concerned with stock identity. (*Australian Fisheries Newsletter*, April 1962.)



Canada

FREEZING SYSTEM RESEARCH TO AID IN DEVELOPMENT OF BRITISH COLUMBIA TUNA FISHERY:

The development of an active tuna fishery in British Columbia may be brought closer to reality by work being carried out by the Fisheries Research Board of Canada at its technological station in Vancouver. This work involves the design of freezing equipment which can be used at sea to preserve

the catch and enable vessels to range far offshore.

The Research Board technologists are working with the Industrial Development Service of the Federal Department of Fisheries on the project, which in its present state is intended to equip four big seiners with suitable freezing systems which will differ in certain important respects from those now in use on United States tuna vessels. The equipment being designed is felt to have many advantages for local vessels. (*Canadian Trade News*, February 1962.)



Ceylon

DEPARTMENT OF FISHERIES TO PURCHASE FISHING TRAWLERS:

The Government of Ceylon has approved the expenditure of five million rupees (US\$1.1 million) for the purchase of five trawlers, one of which will reportedly be purchased from Yugoslavia. Worldwide tender notices will be issued for the remaining four in the near future. Bids should be around one million rupees or approximately \$210,500 per trawler in order to receive consideration. (United States Embassy, Colombo, report dated June 18, 1962.)



Congo Republic

ONLY FISH CANNERY PACKS TUNA AND PILCHARDS:

The only fish-canning factory (packing only tuna and pilchards) in the Republic of the Congo invested new capital in 1961 to increase the



Congo Republic (Contd.):

output of its cannery, and also double the capacity of its storage facilities.

The pack was expected to rise by about one-third in 1961 to a monthly average of between 450,000 and 500,000 cans of tuna and pilchards, compared with 375,000 cans in 1960. By the end of the third quarter 1961, the output was running much higher, and was about double the 1960 rate. The Congo tuna and pilchard pack is sold almost exclusively in the Equatorial Customs Union.

A large United States firm with a sizable operation in Ghana indicated serious interest in setting up a fish-processing and fish-freezing plant at Pointe-Noire if suitable investment incentives and other concessions were granted by the Congolese government. Little progress had been achieved on that proposal by the end of 1961 although independent studies indicated that long-term investment opportunities in the fishing and fish-processing industry in the Congo were good.

No statistical data are available on salt- or fresh-water fishing operations in the Congo. Most of the Congo's fishing is done by pirogues (canoe-like boats) operating from beaches and in the rivers. Some fish supplies are also sold in Pointe-Noire by trawlers operating out of other countries. The canning plant also has a small fishing fleet of its own.

Despite the introduction in June 1961 of an Investment Code setting forth certain rights, privileges, and guarantees for investors, there appeared to be little additional interest, internally or externally, in undertaking private investments in new plants, or in the expansion of existing facilities in the fishing industry.



Denmark

SECOND FISH-FREEZING
VESSEL FOR U. S. S. R.:

After only 19 days in the working dock, a Copenhagen shipyard launched the M/S Vitus Bering on June 9 for V/O Sudoimport, Moscow. The vessel is the 21st refrigerated type constructed by the shipyard for the U.S.S.R., since World War II and is the second in a series of four fish carriers. Construction time in the dock was cut from 74

to 19 days by assembling the vessel in six sections. Specifications are the same as for the Skryplev, the first in the series, christened May 10, 1962.

The Vitus Bering is equipped with controllable-pitch propeller which can be operated either from the main bridge or from a small bridge placed immediately above the stern ramp. In view of the very stringent requirements with regard to accurate and careful maneuvering while the catch is being taken aboard, the vessel is also equipped with a so-called "activated rudder," consisting of an electrically-driven propeller mounted in a nozzle on the actual rudder. This special rudder arrangement makes it possible to turn the vessel even when she is making no headway.

The Vitus Bering is intended to serve as mothership and refrigerated fish carrier for the Soviet trawler fleet operating in various waters--the North Atlantic, the Arctic Ocean and the Pacific Ocean. She represents the most up-to-date trends in her field.

The catch will consist mainly of cod. The vessel is provided with a large ramp at the stern so that the fish can be taken aboard direct from the sea, and there is a gate with which to close the opening. The fish are taken over from the fishing fleet in two ways: (1) either direct from the vessels over the ship's side as hitherto or (2) as something entirely new, from trawl bags which are left by the trawlers in the water and marked by a buoy. Often these buoys are provided with radar reflectors so that the Vitus Bering will be able to locate them easily by means of radar.

By means of a line-throwing apparatus, a catching device is shot over a floating line attached to the bag. A powerful winch then hauls the catch up the stern ramp and on to the deck where it is emptied into stalls. From here the fish is skidded directly to the ship's two raw product bunkers. For short-time preservation of the fish, two ice generators are installed in connection with the fish stalls which, from sea-water, can produce a total of 10 metric tons of scale ice per day. Irregular fish is sorted out on the deck and poured into the raw product bunker of the fish-meal plant.

From the raw product bunker all transport of the fish is mechanical right up to its being stored in cartons in the holds. On the way the

Denmark (Contd.):

fish is slit open and gutted. This process is still done manually but with automatic feed and removal at the working places. There are special machines for cutting off the fish heads. After washing in continuously-working washing machines, the fish is weighed out automatically in portions of about 10 kilograms (22 pounds), tipped into trays with spring-loaded lids, and taken to the freezing tunnel.

After approximately half an hour's freezing, the lids are removed and the block of fish, which will now retain its shape, is given about four hours' final freezing. Then the fish is loosened from the trays by superficial thawing, it is glazed by immersion in water for a few seconds, and is taken via a reception conveyor on to the packing site. The entire further preparation of the iced fish requires only 4 men, whereas in previous refrigerator vessels delivered to the Soviet Union this work required 8 men.

The entrails and fish heads are taken automatically from the cutting tables to the raw product bunker of the fish meal and fish oil plant, which has a capacity to process 30 tons of raw products per day. In the treatment of cod, the liver is separated from the entrails and is processed into medicinal oil in a special liver-oil plant. Two fresh-water generators with a capacity of 20 tons per day take care of the fresh water supply. (Fisheries Attache, United States Embassy, Copenhagen, June 19 1962.)

* * * * *

FISH FILLETS AND BLOCKS AND FISHERY INDUSTRIAL PRODUCTS EXPORTS, APRIL 1962:

Denmark's exports of fresh and frozen fillets and blocks during the first four months of this year were 21.3 percent or almost 5.0 million pounds greater than in the same period of 1961. The exports of cod and related species dropped 3.8 percent, but flounder and sole fillets were up 19.7 percent and herring fillets were up 137.0 percent. During the first four months this year exports to the United States of fresh and frozen fillets and blocks of almost 5.0 million pounds (mostly cod and related species) were down 1.7 percent from the exports of almost 5.1 million pounds in the same period of 1961.

Denmark's exports of fresh and frozen fish fillets and blocks during April 1962 were up 36.2 percent or almost 1.5 million pounds as compared to the same month in 1961. Of the total exports, almost 1.6 million pounds (mostly cod and related species) were shipped to the United States in April.

Denmark's exports of fish meal, fish solubles, and similar products in January-April 1962 were up 64.4 percent or 6,930 tons from the same four months a year earlier.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks and Fishery Industrial Products, April 1962 ^{1/}				
Product	April		Jan.-Apr.	
	1962	1961	1962	1961
Fillets and Blocks:	..... (1,000 Lbs.)			
Cod and related species.	2,687	2,475	13,285	13,787
Flounder and sole	1,514	1,065	6,989	5,837
Herring	1,309	462	7,668	3,236
Other	147	151	261	389
Total	5,657	4,153	28,203	23,249
Industrial Products:	..... (Short Tons)			
Fish meal, fish solubles, and similar products . .	3,618	839	17,692	10,762
^{1/} Shipments from the Faroe Islands and Greenland direct to foreign countries not included.				



Typical wooden fishing craft used in Denmark.

During April 1962, Denmark exported more than 4 times (up 2,779 tons) the meal, fish solubles, and similar products shipped out in the same month of 1961. The principal buyers were the United Kingdom, West Germany, Finland, and Sweden.



Ecuador

GOVERNMENT PLANS AID TO FISHING INDUSTRY:

The Quito newspaper *El Comercio*, on June 22, 1962, reported that Ecuador's Minister of Development called a meeting of officials of the National Fisheries Institute during the week of June 25 to prepare a program for immediate assistance to the fishing industry. The Minister proposed that the Institute consider: (a) a technical study for improvement of coastal fishing; (b) provision of facilities to enable small fishermen to acquire motors and nets in order to eliminate the primitive methods of the small fishing boats; (c) placing in immediate operation the freezing plants of Manta and Puerto Lopez in order to help small fishermen who lose part of their catch because of lack of refrigeration; (d) installation of freezing plants in other fishing centers;

Ecuador (Contd.):

(e) taking steps to promote establishment of additional canneries and factories for preparation of fish meal; (f) coordinating with the Ministry of Economy the installation of refrigeration in principal cities in order to facilitate increased consumption of fish.

The article states that this program will provide protection to small fishermen, who will be able to receive better prices and be able to sell fish to consumers at lower prices, thereby contributing to improvement of the nutritional level of the Ecuadorean people.

* * * * *

RESTRICTED FISHING ZONE ESTABLISHED OFF COAST:

Purse seiners are prohibited from fishing within 40 marine miles of the Ecuadorean coast between Cabo Pasado and Punta de Santa Elena, according to Decree 749, published in *Registro Oficial* 170, dated May 31, 1962. The following is an informal translation of the decree.

"No. 749 - Carlos Julio Arosemena Monroy, Constitutional President of the Republic,

"Considering: That, the Manabi Association of Boat Owners (AMAPE) has presented to the Ministry of Development a petition asking that tuna fishing in Ecuadorean waters be regulated in a manner so that it does not adversely affect the national fishing fleet;

"That, having sent a Special Commission of representatives of the Ministry of Development and the Ministry of Defense, it has been established that the activity of Ecuadorean tuna boats would be affected considerably by the system of fishing known as purse seiner; and,

"That, in conformity with Article 13 of the Maritime Hunting and Fishing Law, the Executive Branch is authorized to prohibit, restrict, limit or condition fishing activities,

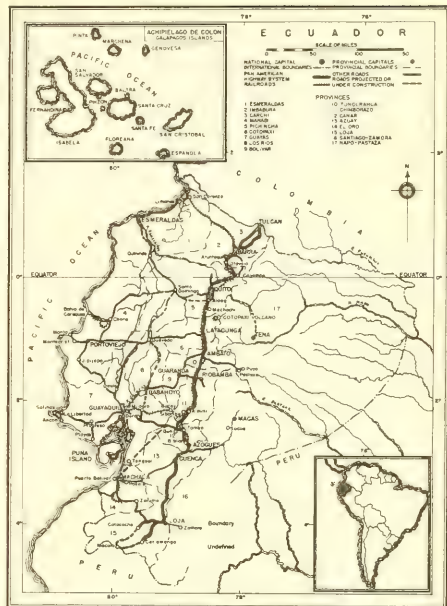
"Decreets: Article 1 - Fishing vessels are prohibited from fishing tuna by means of nets (system known as purse-seiner), in the section of the sea comprehended within the following limits: from the beacon of Cabo Pasado, an imaginary line, 40 marine miles to the west to the point 00° 22'00" south latitude and 81° 10'00" west longitude. From this point with a true route of 195° to another point situated in the sea at 02° 12'00" south latitude and 81° 40'00" west longitude, that is to say, to 40 miles west of Punta de Santa Elena; and from there, with a true route of 90°, until ending on land at Punta de Santa Elena.

"Article 2 - Said zone is declared a National Reserve, in which there will be permitted only fishing by hook-and-line subject to pertinent legal provisions.

"Under the present decree, foreign flag fishing vessels will continue subject to the provisions of Executive Decree No. 981, of May 23, 1961, published in *Official Registry* No. 229, of June 2 of the same year. (Note: this decree prohibits foreign flag vessels from fishing for bait between Punta de Santa Elena and Cabo Pasado.)

"Article 3 - The prohibition provided in Article 1, modifies the fishing permits granted to purse-seiners, limiting their operations to outside the reserve zone.

"Article 4 - All foreign-flag tuna fishing vessels are obligated to present themselves to the captain of the Ecuadorean port closest to their route, in order to have their documents countersigned, on entering and leaving national territory.



"Article 5 - Authorized Ecuadorean consuls, on granting the matricula and fishing permit, will receive a sworn statement from the captains of fishing vessels, that will be evidenced in writing at the bottom of such documents, that they understand the provisions of the present decree.

"Article 6 - Any violations of the provisions of this decree will be punished in accordance with the sanctions provided in Article 52 of the Maritime Law of Hunting and Fishing.

"Article 7 - The Ministers of Development, Foreign Affairs and Defense are given responsibility for enforcement of this Decree.

"Signed in the National Palace at Quito on May 15, 1962."



Fiji Islands

GOVERNMENT TO APPROVE JAPANESE-BRITISH TUNA BASE:

The plan to establish a large tuna base in the Fiji Islands under a cooperative agreement between the South Pacific Ocean Fisheries Cooperative Association (Japanese) and a British fishing and canning company was expected to be formally approved by the Fijian Government around June 10, 1962. As soon as the Fijian Government approved the project, the Association planned to submit an application to the Japanese Government for approval to engage in the joint enterprise, which calls for the emigration of Japanese fishermen to the Fiji Islands.

Emigration of Japanese fishermen to a foreign country, as planned for in the Fiji Islands tuna venture, is unprecedented in the history of the Japanese overseas fishery. The Director of the Fijian Government Economic Development Program,

Fiji Islands (Contd.):

who came to Japan to conduct preliminary discussions with the Japanese Government, expressed his hope to the Fisheries Agency that the Japanese Government will by all means approve the joint tuna venture, which would help promote the industrial development of the Fiji Islands. Prior to his departure from Japan on May 23, the Director stated that the Fiji Government would probably approve the project around June 10 of this year. He revealed his Government's plan to grant 7-year resident permits to the emigrating Japanese fishermen in order to firmly establish a tuna fishery in the Fiji Islands.

The Association has expressed its views on the emigration of Japanese fishermen as follows:

1. The Fiji Islands tuna base is not merely a fishing venture, but an emigration program which the Fiji Government is fully supporting to the extent of granting 7-year resident permits to Japanese fishermen and their families. We would like the Japanese Government to consider this point. We hope that this venture, which will be operated in accordance with Fiji laws, will contribute to the industrial growth of the Fiji Islands and also provide an opportunity to demonstrate Japan's fishing techniques.

2. Thirty fishing vessels, each of 99 tons gross, will be assigned to the Levuka tuna base in the Fiji Islands. (According to earlier press reports, a total of 100 fishing vessels would be assigned to the tuna base over a four-year span.) All catches will be landed at the Fiji Islands and none will be brought back to Japan. Fishing operations will be organized in such a manner that the fishing vessels will not call at any port outside the Fiji Islands.

3. Japanese are investing heavily in this venture and the Fiji Government, endeavoring to cooperate, has arranged to extend the resident permits for emigrating Japanese fishermen from the original 4 years to 7 years, with provisions for automatically extending them even after their expiration. The Fiji Government has gone to this extent to establish this project and we hope the Japanese Government, on its part, will approve Japanese participation in the joint venture

4. The Association plans to operate 30 fishing vessels at the Fiji Islands base and the vessels are to deliver their catches to the fishing and canning company which will be established with Fiji and Japanese capital. However, the Association hopes to determine the actual size of the fishing fleet in accordance with the capacity of the land facilities and believes that fishing operations can be started by May 1963. (*Suisan Keizai Shimbun*, June 6, 1962.)



France

FISHING FLEET, 1961:

France's commercial fishing fleet at the end of 1961 numbered 14,206 different types of craft. Of the 1,422 trawlers in operation during the year, 31 were used for fishing and

French Fishing Vessels Operating in 1961

Type Vessel	No. of Vessels
Trawlers	11,422
Tuna clippers	137
Lobster vessels	147
Other fishing vessels	1,700
Small fishing craft ^{1/}	10,800
Total	14,206

^{1/}Less than 10 tons.

salting fish on the Grand Banks, and 3 were freezer-trawlers. Seventeen vessels of the French tuna fleet were equipped with freezing facilities. Lobster vessels included 31 fitted out with freezing equipment. (*La Pêche Maritime*, May 20, 1962.)



Ghana

JAPANESE FISHING COMPANY TO BASE FOUR TUNA VESSELS IN GHANA:

A Japanese fishing company was planning to send *Kuroshio Maru* Nos. 72 and 73 (each 240 tons gross) to Ghana where they will be employed in pole-and-line fishing. These two vessels were scheduled to depart for Ghana around mid-July.

The number of vessels the Japanese firm plans to employ at the Ghana tuna base now totals 4, including the two pole-and-line vessels *Kuroshio Maru* Nos. 70 and 71 (each 239 tons gross) dispatched earlier to Ghana. In addition, the firm is reported to have started construction of another tuna vessel of this same size. (*Shin Suisan Shimbun Sokuho*, June 5, 1962.)



Greece

FISHERY LANDINGS, 1961:

Fishery landings in Greece in 1961 were up 3.2 percent from 1960. The ex-vessel value in 1961 was about 828.0 million drachmas (US\$27.6 million), an 8.3 percent drop as compared with the 1960 value of 902.5 million drachmas (\$30.1 million).

Greek Fishery Landings by Fishing Areas

Fishing Area	1961	1960
	.. (Metric Tons) . . .	
Atlantic	14,500	8,000
Mediterranean	8,500	9,000
Middle and near water (trawlers and purse-seiners) . . .	53,000	58,000
Inshore	10,000	12,000
Lagoons and lakes	6,000	8,000
Total	92,000	95,000

The yield of Greece's various fisheries in 1961 was down, except that the yield of the Atlantic fishery was nearly double that in the previous year.

The average ex-vessel price during 1961 was 9 drachmas per kilo (13.6 U. S. cents a

Greece (Contd.):

a pound), as against 9.5 drachmas a kilo (14.3 cents a pound) in 1960.

* * * * *

COMMERCIAL FISHING VESSEL FLEET, 1961:

The Greek fishing fleet at the end of 1961 was up to nearly 6,000 vessels, according to the annual census taken by Greece's Director of Fisheries (Ministry of Industry). Smaller boats such as gill-netters, drift-netters, long-liners, and other small craft comprised about 80 percent of the Greek commercial fishing fleet.

Greek Fishing Vessels Operating in 1961	
Type of Vessel	Number of Vessels
Distant-water freezer-trawlers	13
Middle- and near-water trawlers	369
Purse seiners ("gri-gri")	283
Combination boats ("gri-gri" and trawlers)	138
Small "gri-gri" and similar crafts	173
Trates (small boats using ring nets)	968
Gill-netters, Drift-netters, and Long-liners (small size boats)	3,785
Sponge fishing boats	186
Total	5,915

* * * * *

NEW STEEL TRAWLER BEING BUILT:

A new steel fishing trawler is being built by a Greek shipyard. It is to be the sister-ship of a similar one already under construction. The new vessel will have an overall length of a little more than 85 feet, and will be equipped with a Danish propulsion engine of 280 hp. Construction will be completed by the end of 1962 or in January 1963.

* * * * *

ARTIFICIAL CULTIVATION OF SPONGES:

The installation of the first experimental bed for the artificial cultivation of sponges in Greece was completed early this year, according to a report made to the Greek Director of Fisheries. It was reported that 15,000 sponges were placed in the experimental beds, and that their growth is being closely observed.

* * * * *

SPONGE EXPORTS, 1961:

Greece's sponge exports during 1961 amounted to 203,000 pounds, valued at 175 million drachmas (US\$5.8 million), according to the National Statistics Bureau of Greece. (Alieia, 1962.)

Iceland

FISHERIES TRENDS, MAY 1962:

North Coast Herring Season: Two factors were expected to delay the start of Iceland's north coast herring season usually set for about mid-June. One was a strike by the Reykjavik metal workers' union which began May 5, 1962. The strike could postpone the conversion of certain vessels and processing plants to herring operations; however, outside of Reykjavik local labor was used to accomplish this changeover. Another disturbing factor was a demand by the Fishing Vessel Owners for a larger share of the catch. They demand that the percentage of catch to the herring fishermen be reduced to compensate the owners for the cost of new, more efficient equipment which has been installed on many fishing boats. The Fishing Vessel Owners were threatening a lock-out unless this matter was satisfactorily settled.

Herring Exports to Norway End: The Norwegian transport of herring from Iceland to Kristiansund, Norway, stopped after only 2,344 metric tons of a 5,000-ton contract were shipped. The reason for cancellation of the remainder of the contract was Norwegian concern that the Icelandic employers would resort to a lockout on June 1 to obtain satisfactory settlement of their demand for a larger percentage of the catch. The Norwegian action put an end to Faxa Bay herring operations.



Barrels of herring being readied for shipment.

Record Herring Sale to U.S.S.R.: On February 11, 1962, the Icelandic press announced agreement on a contract providing for sale of 5,000 metric tons of frozen herring to the Soviet Union. This was reported to be the largest sale of this type herring which has ever been made and delivery of that amount was expected to use up virtually all the frozen herring available in Iceland early this year.

Iceland (Contd.):

Fish Meal: In contrast to the situation a year ago, all fish and herring meal stocks in Iceland early this year had been sold and the continuing demand could not be met.

Whaling Season Opens: Iceland's whaling season opened on May 20, as usual. The whaling ships returned May 22 with three whales in tow. A fourth whaling vessel was to be added to the fleet when it arrives from Norway. (United States Embassy, Reykjavik, May 24, 1962.)

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EXPORTS OF FISHERY PRODUCTS, JANUARY-APRIL 1962:

During January-April 1962, there was a considerable increase in exports of frozen herring, frozen fish fillets, salted herring, herring oil, and herring meal as compared with the same period in 1961, according to

the Statistical Bureau of Iceland's Statistical Bulletin, May 1962. Exports of fish meal and ocean perch meal showed a considerable decrease in the first four months of 1962.

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FISHERY LANDINGS BY PRINCIPAL SPECIES, JANUARY-MARCH 1962:

Species	January-March	
	1962	1961
	.. (Metric Tons) ..	
Cod	66,560	58,820
Haddock	12,422	11,557
Saithe	4,546	2,408
Ling	3,444	2,318
Wolffish (catfish)	4,464	4,212
Cusk	3,059	2,875
Ocean perch	2,391	3,771
Halibut	404	419
Herring	27,442	19,537
Shrimp	187	382
Other	1,093	869
Total	126,012	107,168

1/ Except for herring which are landed round, all fish are drawn weight.

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Icelandic Fishery Exports, January-April 1962 with Comparisons

Product	Jan.-Apr. 1962			Jan.-Apr. 1961		
	Qty.	Value f.o.b.		Qty.	Value f.o.b.	
		Metric Tons	US\$		Metric Tons	US\$
Salted fish, dried	961	18,886	438	2,158	41,185	1,079
Salted fish, uncured	6,643	81,924	1,901	4,554	47,165	1,236
Wings, salted	159	1,861	43	463	4,433	116
Stockfish	3,361	87,020	2,019	4,274	98,636	2,584
Herring on ice	4,828	16,895	392	2,976	8,898	233
Other fish on ice	12,619	57,258	1,328	10,932	43,386	1,137
Herring, frozen	10,487	53,769	1,247	6,992	34,756	911
Other frozen fish, whole	834	10,649	247	619	6,304	165
Frozen fish fillets	18,475	307,669	7,138	11,580	178,208	4,669
Shrimp and lobster, frozen	77	6,844	159	141	9,870	259
Roes, frozen	505	9,822	228	430	5,391	141
Canned fish	72	4,711	109	101	6,663	175
Cod-liver oil	1,242	10,776	250	1,517	12,277	322
Lumpfish roes, salted	67	969	22	88	1,285	34
Other roes for food, salted	1,494	20,518	476	1,641	16,693	437
Herring, salted	16,268	145,851	3,384	7,667	57,906	1,517
Herring oil	14,267	62,823	1,457	3,815	20,323	532
Ocean perch oil	15	59	1	189	1,075	28
Whale oil	388	2,558	59	-	-	-
Fish meal	8,369	52,076	1,208	17,414	65,563	1,718
Herring meal	14,816	91,861	2,131	7,237	28,758	753
Ocean perch meal	5	23	1	1,459	4,967	130
Wastes of fish, frozen	538	1,463	34	3,207	6,141	161
Liver meal	150	985	23	135	715	19
Lobster and shrimp meal	-	-	-	194	376	10
Whale meal	252	1,310	30	305	1,025	27
Whale meat, frozen	101	712	17	292	1,965	51

Note: Values converted at rate of 1 kronur equals 2.32 U.S. cents in 1962 and 2.62 U. S. cents in 1961.

Iceland (Contd.):

UTILIZATION OF FISHERY LANDINGS,
JANUARY-MARCH 1962:

How Utilized	January-March	
	1962	1961
	.. (Metric Tons) ..	
Herring^{1/} for:		
Oil and meal	12,551	5,961
Freezing	7,385	5,045
Salting	2,061	6,037
Fresh on ice	5,375	2,494
Canning	69	-
Groundfish^{2/} for:		
Fresh on ice landed abroad	11,232	7,813
Freezing and filleting	43,293	41,047
Salting	28,100	22,952
Stockfish (dried unsalted)	12,305	12,691
Home consumption	2,787	1,969
Oil and meal	667	777
Shellfish for:		
Freezing (shrimp)	181	270
Canning (shrimp)	6	112
Total production	126,012	107,168
1/ Whole fish.		
2/ Drawn fish.		



Indonesia

JAPANESE GOVERNMENT SEEKS
INDONESIAN FISHING BASE:

As one of its projects for this year, the Japanese Overseas Fisheries Cooperative Association, a government-sponsored organization, hopes to promote the establishment of a fishing base at Tandjung Perulik nearby Djakarta, Indonesia. Reportedly, a letter has already been written to the Indonesian Government requesting that it approve establishment of the base.

Establishment of a fishing base nearby Djakarta has long been sought by Japan. Negotiations with the Indonesian Government to establish a joint fishing base were first begun three years ago by the Wakayama Prefectural Fisheries Cooperative Association and a Japanese steel import-export firm. Under present plans, the Japanese firms would invest a total of 1 billion yen (US\$2.8 million) and engage in bottom fishing and tuna fishing. Japanese tuna vessels would be assigned to the base and part of the \$2.8 million would be used to construct tuna vessels in Japan, which would be assigned to the base. Tuna landed at that base would be exported to the United States, with exporting arrangements to be handled by a Japanese marine products trading firm.

Besides furnishing fishing vessels, Japan is to construct freezing, housing, and communication facilities at the Tandjung Perulik base. The Wakayama Fisheries Cooperative Association has been negotiating for some time with the Economic Cooperative Fund (Government fund established in February 1960 with a capital of 5.2 million yen or US\$14.4 million, to promote the development of Japanese enterprises in the undeveloped countries in Southeast Asia) to secure sufficient funds to construct the fishing base. Although press reports in April indicated that the Wakayama Association was encountering difficulty in securing a loan, the Economic Cooperative Fund is now unofficially reported to have approved a loan of 80 percent of the total investment. The Fisheries Agency is also reported to have given unofficial approval to this project. (*Shin Suisan Shimbun* Sokuho, May 22, 1962, and other publications.)



Israel

TANGANYIKANS TAKE FISHING
COURSE IN ISRAEL:

The Government of Israel has organized a four-months course for African officers of the Fisheries Section of the Tanganyikan Ministry of Agriculture. Six Africans have been selected to attend the Michmoret School for Fisheries and Navigation. (United States Embassy, Tel Aviv, May 23, 1962.)



Italy

JOINT UNITED STATES-ITALIAN
VENTURE TO CAN AND
MARKET TUNA IN ITALY:

A large United States west coast tuna canner representative in Italy reported late in May 1962 that his firm was in the final stages of concluding a joint-venture relationship with the largest Italian fishery firm in Italy. The venture includes the canning of tuna and distributing both the canned product and frozen tuna on the Italian market. The new organization was to be established during the week ending June 2, with headquarters in Rome and an office in Leghorn, the site of the Italian fishery firm's operations.

The stated object of this venture is the marketing in Italy of tuna varieties not adapted to the United States market because of color criteria, i.e., not eligible for the accepted designations of "white meat" or "light meat." Reportedly, the major source of the raw fish for the United States-Italian venture will be Japanese tuna. It is probable, however, that any of the United States firm's stations will ship to the new joint firm in Italy those portions of their catch which are not considered suitable for the United States market. (United States Consul, Milan, report of June 1, 1962.)

JAPAN SUPPORTS ITALIAN PACKERS'
MOVEMENT TO SEEK INCREASE IN
FROZEN TUNA IMPORT QUOTA:

The Japanese Foreign Ministry reportedly has instructed the Japanese Embassy in Italy to support the movement now being conducted by Italian packers who are seeking an increase in the frozen tuna import quota established by the Italian Government.

Based on recommendations made by the Common Market, the Italian Government es-

Italy (Contd.):

tablished an annual frozen tuna import quota of 25,000 metric tons, of which 14,000 tons were allocated for imports from Japan and 11,000 tons for imports from other countries. This quota went into effect on January 1, 1962. Reportedly, this quota was determined on the basis of Italy's frozen tuna imports in 1958, but in 1961 Italy imported from Japan alone 28,000 metric tons of frozen tuna. The Italian packers are urging their Government to increase the frozen tuna import quota for the following reasons:

1. Frozen tuna imports of 25,000 metric tons cannot meet the demand of the Italian tuna packers.
2. The present import quota will force Italian packing plants that have been equipped to meet the growing demand for canned tuna to suspend some of their operations.
3. The existing packing plants are equipped to pack fishery products, so from a practical standpoint, they cannot switch to packing of fruits and animal meat. (Suisan Keizai Shimbun, May 18, 1962.)



Ivory Coast

FIRST FISHING VESSEL BUILT:

Recently launched in the Ivory Coast was a 68-foot Diesel-powered sardine fishing vessel with a payload capacity of 18 to 20 tons. It is called the Golitcha, and is equipped with modern radio and radar equipment, and bunks a crew of 6 seamen and 10 fishermen. This is the first commercial fishing vessel built in the Ivory Coast and was constructed under supervision of a Spanish shipwright from Morocco. Keel of a second similar boat has already been laid.

These fishing vessels will boost the budding fishing industry and on-the-job training in modern boat construction in the Ivory Coast. (United States Embassy, Abidjan, report of June 12, 1962.)



Japan

EXPORT PRICES FOR FROZEN TUNA SHIPPED TO U. S.:

The export prices for frozen tuna shipped to the United States directly from Japan were still firm in May 1962. According to the Japan-periodical Suisan Tsushin, United States packers have offered to pay US\$335 a short ton f.o.b. Japan for albacore tuna. Although an ex-vessel price as high as \$375 per metric ton has been offered by Japanese buyers for clipper-caught tuna, exporters are having difficulties buying fish even at that price.

As of May 1962, albacore catches by the clipper and hook-and-line vessels landing in Japan were all being bought by the canners.

The periodical also reports that United States packers are gradually changing their attitude about buying only small yellowfin, which has been the practice. They are even buying large yellowfin and the Japanese believe that even big-eyed tuna will probably be in demand in the United States in the near future.

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REJECTIONS OF FROZEN YELLOWFIN TUNA BY U. S. PACKERS INCREASE:

Exports of Japanese frozen yellowfin tuna fillets to the United States in the second quarter of 1962 increased but, at the same time, the percentage of rejections of yellowfin tuna by United States importers also increased, according to translations from the June 13 and 19, 1962, issues of Suisan Tsushin. Towards the end of the second quarter, 40 percent of a shipment of 230 tons of fillets exported from Japan proper were rejected by two California packers. Several other large claims involving more than 20 percent of shipments were reported to have been filed by other American packers.

Japanese frozen tuna producers are investigating the cause of the rejections. Shipments delivered to the United States packing companies by the Nanko Maru and the Ishiyama Maru, two nonscheduled freighters, of which a large percentage were rejected, are reported to have consisted wholly of tuna from the Indian Ocean caught off Madagascar in March and April.

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Japan (Contd.):

APRIL-MAY 1962 EXPORTS OF FROZEN TUNA TO UNITED STATES:

Exports of frozen tuna to the United States direct from Japan proper for the first two months (April-May) of the Japanese fiscal year 1962 (April 1962-March 1963) show more than a twofold increase over the same period a year ago, with albacore exports 2,719 short tons and yellowfin exports 1,116 short tons. For April-May 1961, albacore exports totaled 1,141 short tons and yellowfin exports 5,153 short tons.

This increase in exports of frozen tuna to the United States is attributed primarily to increased vessel landings in Japan, making that much more fish available for export, and to the great demand for tuna in the United States. Even tuna normally used by the Japanese fish sausage manufacturers, particularly yellowfin tuna fillets, are being diverted to the export market.

Reportedly, a tight money situation exists in Japan and the Japanese Government has imposed strict controls on the system of discounting promissory notes. Fish dealers are reported to be seeking to avoid marketing their products in Japan since this involves the exchange of promissory notes and are diverting fish to the export market to obtain ready cash. One result of this trend, which is expected to continue for some time, is the increase in claims against poor quality tuna shipments.

Reportedly, for April-May 1962, clipper-caught albacore were exported for \$360-\$385 a short ton f.o.b. Japan, averaging \$370 a short ton. Clipper-caught yellowfin were exported for \$340-\$360 a short ton f.o.b. Japan, averaging \$355 a short ton. (Suisan Tsushin, June 9, 1962.)

FROZEN TUNA EXPORTS TO THE UNITED STATES IN 1961:

Japan's exports of frozen albacore and yellowfin tuna (including fillets and loins) to the United States in 1961 increased 10.6 percent from the previous year, according to the Japanese Export Frozen Tuna Manufacturers Association. The increase was mainly due to more exports of yellowfin tuna fillets and loins. Japanese shipments of albacore tuna (round and processed fish) to the

Japanese Exports of Frozen Tuna to the United States by Species, Type, and Original Production Source, 1959-61			
Species	1961	1960	1959
... (Short Tons) ...			
Albacore, round:			
Pole-and-line caught	450	601	705
Iced-fish landings	1,657	2,486	3,241
Mothership landings	7,253	5,175	4,932
Freezer-boat landings	15,664	15,801	14,116
Total	25,024	24,063	22,994
Albacore, dressed			
" fillets	10	10	8
" loins	1	20	8
Total	1,355	1,115	917
Total Albacore	1,366	1,145	933
Yellowfin, gilled & gutted, and dressed:			
Iced fish landings	1,238	1,993	6,121
Mothership landings	3,155	4,300	1,443
Freezer-boat landings	19,297	18,509	19,101
Dressed fish	484	75	844
Total	24,174	24,877	27,509
Yellowfin, other:			
Fillets (4-cut)	971	-	-
Fillets (mothership)	86	-	-
Fillets (freezer-boat)	2,923	215	645
Loins	3,157	1,876	2,070
Total	7,137	2,091	2,715
Total Yellowfin	31,311	26,968	30,224
Grand Total	57,701	52,176	54,151

United States market during 1961 rose more than 1 million pounds from the previous year. Deliveries to the United States of round albacore from Japan's mothership landings were 2 million pounds more than in 1960, but were somewhat lower for fish caught or landed by other types of Japanese vessels.

UNITED STATES TUNA PACKER FILES FOR PATENT:

A large United States tuna packer reportedly has applied for a Japanese patent on its "low-temperature cooking" technique used in processing canned tuna. Should this low-temperature cooking process, which already is widely used in Japan, be approved by the Japan Patent Agency, Japanese packers will no longer be able to use this process unless they pay a royalty to the American packer. The Japan Canned Tuna Producers Association is planning to investigate the patent application and is expected to file an objection with the Patent Agency. (Suisan Tsushin, June 16, 1962.)

NEW CANNERY TO PACK TUNA:

A large Japanese fishing company in June 1962 completed construction of a new cannery at Shimizu, Shizuoka Prefecture, which has a capacity of producing either 700 cases of canned tuna a day or 1,000 cases of canned man-

Japan (Contd.):

darin oranges per day. Completed at a cost of 30 million yen (US\$83,000), the new cannery was built to replace the smaller cannery operated by that company at Shimizu. The old cannery is to be converted into a warehouse. (Suisan Keizai Shimbun, June 29, 1962.)

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GROUP TO STUDY TUNA RESOURCE PROBLEMS:

The first meeting of the council for the problems of the skipjack tuna resources, newly established organization of the Japan Federation of Skipjack Tuna Fisheries Co-ops, was held in June 1962. The objective was to discuss tuna resources among scientists, government officials, and representatives of the industry in general. The council's function was decided to be purely to study resource problems. A meeting of the group will be held every month.

The council will dig into the problems of the tuna resources at a series of meetings. No conclusions or concrete recommendations are expected to come out of the discussions until the group has had three years to study the problems of the tuna resources.

Judging from discussions at the first meeting, the following became clear: (1) The catch ratio of yellowfin was found to be on the decrease all over the sea areas and adequate attention should be given this in the future; also the places where yellowfin live differ according to their age. (2) Resources of albacore have not been ascertained in the Indian Ocean and Atlantic. Also, in the Pacific, resources in its northern and southern parts are different. In the north, natural factors predominate and periodical changes take place every six years. (3) The structure of big-eyed resources is between yellowfin and albacore, and the farther north studies are made, the more apparent become the effects of catch. (Suisan Tsushin, June 12, 1962.)

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TUNA RESEARCH PROGRAM EXPANSION PLANNED:

The Japanese Fisheries Agency reportedly is planning to carry out an extensive tuna research program to cope with the numerous domestic and international problems that are expected to develop in the tuna fisheries. To

implement this program, the Agency plans to request a tuna research budget of approximately 53 million yen (US\$147,000) for FY 1963 (April 1963-March 1964). The funds will be used to employ about 50 research vessels and training vessels, some of which will be chartered to investigate tuna resources and tuna fishing grounds. The following types of investigations are being planned:

1. Tagging tuna to determine their migration and growth and to identify tuna stocks.
2. Surveying fishing grounds and conducting basic biological studies (investigations on fish size, sexual maturity and distribution of juvenile fish, stomach contents analyses, etc.).
3. Conducting oceanographic surveys to observe the relationship between tuna resources and changes in ocean conditions.

The Fisheries Agency also plans to charter fishing vessels to conduct extensive tagging operations in the equatorial western Pacific Ocean for yellowfin tuna and in the North Pacific Ocean for albacore tuna to estimate the survival and mortality rates of these species and to identify tuna stocks. (Suisan Keizai Shimbun, June 15, 1962.)

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ALBACORE TUNA RESEARCH:

To study albacore tuna schools moving northward, to tag albacore, and to study new fishing gear and new jigs made of synthetic resin to lure fish schools are the objectives of a cruise of the research vessel Tokaidai-gaku Maru. The vessel, operated by Tokai University, sailed from Tokyo early in June 1962 for the sea area in the West Pacific, 20°-40° N. latitude, 165° E. longitude.

The vessel formerly belonged to the Shizuoka Prefecture Fisheries Experimental Station. Since it was taken over by the University, it has been equipped with modern instruments and equipment for fishery research.

The Kanagawa Prefecture Fisheries Experimental Station in June received a report from its fisheries guidance ship, Sagami Maru, now studying tuna fishing grounds in the Pacific. The report pointed out that albacore tuna fishing was good in the spring in the sea area on the east side of Australia. Fishing in the area is promising from April through May. Heretofore, this area has been known as a good albacore fishing ground and was

Japan (Contd.):

generally believed to be so only from the fall through winter months. The Station, however, thought that it was also good from spring through summer. As a result of studies made of data gathered in the area, the Station directed the Sagami Maru to sail in April to study albacore fishing in the area during the spring and summer.

The vessel had fished 17 times in the area as of early June and had obtained a catch of some 50 metric tons. The fish were large, weighing 44 pounds each on the average. As of mid-June, the Sagami Maru was heading for the eastern Pacific to investigate fishing grounds there. (Suisan Keizai Shimbun, June 12, 1962, and other Japanese periodicals.)

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ALBACORE AND SKIPJACK TUNA FISHING CONDITIONS EARLY IN JUNE:

The Yaizu Branch of the Tohoku-ku Fisheries Research Institute released information on fishing conditions of skipjack and albacore off Japan during June 1-5, 1962. The report pointed out that for skipjack tuna, a fishing ground (considered as the best in recent years) had developed around a point 50-80 miles west of Hachijojima Island of the Izu Seven Island archipelago. Good fishing was reported on the west side of Miyakejima Island and at two other well-known fishing grounds. Catch averaged ten metric tons of fish a day.

For albacore tuna, good fishing was reported south of the isolated low temperature belt west northwest of Kinan Rock. In the sea area $31^{\circ}30' - 32^{\circ}30' \text{ N. latitude}$, $145^{\circ}30' - 147^{\circ}30' \text{ E. longitude}$, 4 or 5 tons a day had been caught. Good fishing was continuing. Around a point $31^{\circ} \text{ N. latitude}$ and $152^{\circ} \text{ E. longitude}$, some 10 tons were caught daily on the average.

A later report from a different source stated that since the beginning of the season, no heavy landings of summer albacore had been reported the first half of June and poor fishing continued. The fish schools were showing the earlier tendency of dispersing gradually with the shifting of the oceanic conditions to the summer pattern. Without the usual heavy landings, possibilities are that this year's season for summer albacore fishing may come to an end early. The summer

albacore fishing this season, which was expected to yield landings of 10,000 metric tons each at Yaizu and Shimizu (the same as last year), as of mid-June was expected to yield considerably less fish.

Consequently, the fishing vessels were showing a tendency to fish for skipjack. Skipjack fishing is more stable than albacore fishing. Since the vessels that have been fishing albacore were expected to shift to skipjack fishing earlier than usual, with the exception of large vessels which would continue fishing albacore as long as it continued to be found in inshore waters, the future of albacore fishing was not bright. (Suisan Keizai Shimbun, June 15, and 19, 1962.)

A report around June 20 stated that poor summer albacore fishing continued. While albacore daily landings were but some 200 tons, skipjack landings were becoming heavy and a few days earlier 400 tons were landed at Yaizu and 180 tons at Shimizu. Packer demand for skipjack was good. But high ex-vessel prices continued, and this placed the cannery in a difficult position. (Suisan Tsushin, June 21, 1962.)

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ALBACORE AND SKIPJACK TUNA FISHING CONDITIONS OFF JAPAN, JUNE 1962:

Albacore tuna fishing off the Japanese home islands in June 1962 was reported very poor and landings were averaging less than 100 metric tons a day. Due to poor fishing, ex-vessel albacore prices were not expected to drop below 165 yen to 170 yen per kilogram (US\$416-\$428 a short ton).

A total of 180 pole-and-line vessels were originally reported to be fishing for albacore off Japan. Of those vessels, over 100 vessels were reported to have switched to skipjack fishing and the remaining 80 vessels were also expected to do so early this summer.

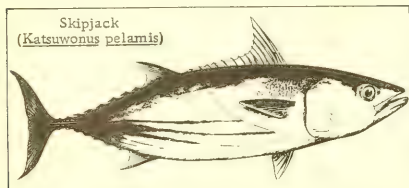
But skipjack fishing off Japan was reported to be very good in June. Packers at Yaizu and Shimizu were reported paying from 80-85 yen per kilogram (\$202-\$214 a short ton) for large skipjack (over 45 lbs.) and 45-50 yen (\$113-\$126 a short ton) for small skipjack (2.5-7 lbs.). Packers in the Sanriku district (northeastern Japan) were reported to be paying 70 yen per kilogram (\$176 a short ton) for large skipjack and about 50 yen per kilogram (\$126 a short ton) for small skipjack. (Suisan Tsushin, June 22, 1962.)

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Japan (Contd.):

SKIPJACK TUNA FISHERY TRENDS, JUNE 1962:

Some 12,000 metric tons of skipjack tuna were landed at Choshi, Chiba Prefecture, Japan, early in June 1962. The ex-vessel prices were US\$326-377 per metric ton.



As compared with 1961, skipjack landings were about 20 days late. The most serious problem this year was a drastic scarcity of sardines used for bait. Some boats were compelled to go as far as Kagoshima Prefecture to get bait. The boats needing 280 buckets of sardines for bait had to be satisfied with only 150 buckets. If more bait was obtainable, more skipjack would be landed.

The vessels were catching skipjack around 320 miles south southeast of Inubozaki Point in Choshi. (Suisan Keizai Shimbun, June 7, 1962.)

ALBACORE AND SKIPJACK TUNA FISHING IN LATE JUNE 1962:

The Japanese summer albacore fishery off Japan late in June 1962 appeared to have come to an almost complete halt, with only 38 metric tons landed at Yaizu and Shimizu June 20-27. Combined cumulative landings for Yaizu and Shimizu for the period April to June 27 totaled about 4,400 tons, or about one-third the landings for the same period last year when 12,700 metric tons were landed. Almost all the live-bait boats were reported to have switched to skipjack fishing. For the remainder of the season, not more than 200 metric tons of albacore are expected to be landed. This means that this year's summer albacore catch will total less than 5,000 metric tons as compared with 14,800 metric tons for 1961 and 17,300 tons for 1960.

Of this year's albacore catch, practically all was reported to have been canned in brine for export purposes. It is estimated that the pack totals about 200,000 standard cases. Ex-vessel prices during the season ranged from 150 yen per kilogram (US\$378 per short ton) at the beginning of the season to a high of 160-170 yen per kilogram (\$403-428 per short ton) from mid-May on. Average ex-vessel prices paid by cannerys were in the neighborhood of 163 yen per kilogram (\$411 per short ton).

On the other hand, skipjack fishing off Japan was reported excellent and press reports indicate that as of June 25 the Japanese skipjack pole-and-line fishing vessels were still having good fishing. As of June 20, a total of 12,172 tons of skipjack was landed at Yaizu since fishing commenced in

April, an increase in landings of 1,935 metric tons over the same period in 1961. Good skipjack fishing was reported well within one day's running time and the Japanese fishing vessels were reported making 2- to 3-day trips. As many as 30 vessels per day were reported coming in to unload their catches.

Despite the heavy landings, ex-vessel skipjack prices were reported relatively firm, with some decline. Data compiled by the Fisheries Agency show that June 21-25 a total of 1,788 metric tons of skipjack was landed at Yaizu. Ex-vessel prices closed with a high of 95 yen per kilogram (\$239 per short ton) and a low of 37 yen per kilogram (\$93 per short ton) on June 25. The relatively firm prices were attributed to the almost total absence of albacore landings by the domestic fleet. Reportedly, about half of the skipjack landings are being diverted to the canneries, 10 percent to the fresh fish market, and the remainder to the dried fish market. (Suisan Keizai Shimbun, June 29, Suisan Tsushin, June 30, 1962, and other sources.)

TUNA CATCH QUOTA FOR SOUTH PACIFIC FISHING BASES MAY BE ESTABLISHED:

Three Japanese fishing firms that are presently conducting tuna fishing operations from bases in the South Pacific Ocean (two from American Samoa and one at Espiritu Santo, New Hebrides) are seeking increases in catch quotas. Interest is being focused on what policy the Fisheries Agency will adopt to handle their requests for catch quota increases since it appears that the Fisheries Agency will no longer be able to authorize quota increases on an individual basis as before because the Japanese fishing companies are continually expanding their overseas tuna base operations. Japanese fishing companies are presently known to be planning joint tuna ventures in the South Pacific Ocean at Tahiti, New Caledonia, the Fiji Islands, and another operation at American Samoa.

The Fisheries Agency will probably first of all establish an over-all quota for the South Pacific Ocean, which it will then allocate to the bases in that area. The over-all quota will have to be determined each year, but for the time being it appears likely that the Agency will allocate quotas for only those bases where tuna fishing can be conducted this year, such as American Samoa, Espiritu Santo, French Tahiti, and French New Caledonia. (Suisan Tsushin, June 11, 1962.)

SOUTH PACIFIC MOTHERSHIP FLEET CATCHING MOSTLY YELLOWFIN TUNA:

The Japanese Nojima Maru (8,800 gross tons) tuna mothership fleet started fishing in the Fiji Islands area on May 27, 1962. As of May 1, the mothership fleet was reported to have landed a total of 536 metric tons, mainly

Japan (Contd.):

yellowfin tuna. The mothership was reported operating in the vicinity of 2°-5° S. latitude, 172° E. longitude. (Suisan Keizai Shimbun, June 7, 1962.)

ATLANTIC OCEAN FROZEN TUNA EXPORT PRICES RAISED:

The Japan Frozen Foods Exporters Association announced in June 1962 that export prices of frozen tuna to Europe in June 1962 were raised by an average of \$10 a metric ton for some tuna species over April-May prices.

Japanese Atlantic Ocean Tuna Export Prices, June 1962		
	Yellowfin	Big-Eyed
	.. (US\$/Metric Ton) ..	
Exports to:		
Italy1/	360	345
Yugoslavia, Tunisia1/	370	355
Czechoslovakia2/	370	355
1/Prices are c.i.f., including 3 percent broker's commission.		
2/Prices are c.i.f., not including 3 percent broker's commission.		

The Association also announced the following f.o.b. prices for Atlantic Ocean tuna exported to the United States: albacore--\$350 a short ton; yellowfin (gilled and gutted)--\$300 a short ton; yellowfin (dressed)--\$310 a short ton. (Suisan Tsushin, June 23, 1962.)

ATLANTIC OCEAN TUNA FISHING CONDITIONS IN LATE JUNE 1962:

Japanese tuna fishing vessels fishing in the Atlantic Ocean were reported to total 68 vessels as of late June 1962, compared with 80 in March, 77 in April, and 69 in May. The decline in the number of vessels fishing in the Atlantic Ocean is attributed to poor tuna fishing.

Fishing vessel reports in June indicated that the peak of the yellowfin tuna fishing in the Atlantic Ocean appeared to have passed and big-eyed tuna were appearing in larger numbers in the catch, making up about 40 percent of individual vessel catches. The fishing vessels were reported to be averaging about 4-5 metric tons per day per vessel. (Suisan Tsushin, June 29, 1962.)

PRODUCERS DISCUSS DECLINING ATLANTIC OCEAN TUNA CATCH:

The Japanese Export Frozen Tuna Producers Association held its first meeting of Fiscal Year 1962 (April 1962-March 1963) on June 4 and conferred on steps the Association should take to cope with the poor fishing in the Atlantic Ocean. According to the catch index compiled by the Tuna Producers Association based on 1959 as 100, in 1960 the catch index was 91.6, in 1961 it dropped to 80.7, and for the period January-June 1962 the index dropped to 68. (Index is compiled by dividing the total annual landings by the total number of vessels in operation for the year. The total number of vessels is derived by adding the number of vessels in operation each month.) The catch index for January-December 1962 is expected to drop below 60, since fishing is usually poorer between July-December. Considering the fact that fishing vessels are becoming larger in size every year, plus the fact that their operating efficiency has increased, the catch rate this year has actually dropped to less than half that in 1959.

The Producers Association discussed the following measures to cope with the declining Atlantic Ocean catches:

1. Prevent more vessels from being added to the Atlantic Ocean tuna fishing fleet, liberalize transshipment quotas for the Indian and Pacific Oceans, and thereby increase the efficiency of the vessels operating in those oceans.

2. Increase the operation of portable fishing vessels.

3. Give preferential treatment to fishing vessels that discover new fishing grounds.

The Association did not arrive at any conclusion concerning the above points but did agree on these points:

1. Tuna resources in the Atlantic Ocean definitely do not look favorable to the fishing industry, so the Japanese Government must be made aware of this situation.

2. Tuna demand is strong, but to meet this demand, the tuna industry must increase the efficiency of fishing vessels, instead of increasing the number of fishing vessels. (Suisan Tsushin, June 6, 1962.)

Japan (Contd.):

FISHERIES AGENCY TO ANNOUNCE NEW TUNA LICENSING POLICY:

The Japanese Fisheries Agency is reported to have completed a draft of a new broad policy concerning the licensing of displaced salmon fishing vessels as tuna vessels, operation of portable-vessel-carrying tuna motherships and regular tuna motherships, and the establishment of tuna bases overseas. Reportedly, the Agency was to solicit the views of the National Federation of Tuna Fisheries Cooperative Associations during the week of June 24 concerning the draft regulation, and the Agency was expected to formulate a definite policy by July 7. (Suisan Keizai Shimbun, June 23, 1962.)

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FISHING COMPANY TO BUILD TEN TUNA VESSELS:

A large Japanese fishing company is planning to build ten 99-ton tuna vessels, as replacements for the ten salmon vessels belonging to its affiliated companies, which were displaced from the salmon fishery this year. The firm has already made tentative arrangements to have the tuna vessels built by three shipbuilding companies. The vessels will be assigned to the firm's tuna mothership fleet. (Suisan Tsushin, June 13, 1962.)

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JAPANESE GOVERNMENT APPROVES INDONESIAN TUNA BASE:

The Japanese Overseas Fisheries Cooperative Association (a Government corporation) announced on June 20 that the Japanese Government has approved the establishment of a joint Japanese-Indonesian tuna base at Tanjung Periuk, Indonesia. Participants in this joint enterprise are the Wakayama Prefectural Fisheries Cooperative Association, a steel import-export firm of Japan, and the Government of Indonesia. The Cooperative Association also revealed in June 1962 that the Japanese Government has already tentatively approved the extension of Government loans for the venture.

The joint tuna base will be established at the port of Tanjung Periuk near Djakarta. Base installations will include a cold-storage plant, a canning plant, and medical facilities.

A total investment loan equivalent to US\$2.6 million will be advanced by the Overseas Economic Cooperative Fund (Japanese Government loan corporation) and other sources.

Initially the Wakayama Prefectural Fisheries Cooperative Association and the steel firm will participate in the joint venture. If results are favorable, other firms will be welcomed to participate in the establishment of a second base.

The Japanese Government approved the fisheries agreement in April at the conference involving the Ministries of Finance, Agriculture-Forestry, and Foreign Affairs, and the Cabinet Planning Board.

Implementation of this plan is being withheld until the Indonesian Government approves the agreement.

Negotiations for the venture were brought to a conclusion when the chairman of the Overseas Fisheries Cooperative Association presented his proposals to the Indonesian Government in March 1962. (Shin Suisan Shimbun Sokuho, June 22, 1962.)

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TUNA LANDINGS FOR FY 1961:

Japanese landings of tuna and tuna-like fish totaled 651,355 metric tons in fiscal year 1961 (April 1961-March 1962), according to data compiled by the Fisheries Agency. This was an increase of over 105,620 metric tons over the FY 1960 (April 1960-March 1961)



A new Japanese tuna long-liner.

Japan (Contd.):

catch. The previous high catch was recorded in FY 1959 (April 1959-March 1960) when 562,991 metric tons were landed. (Suisan Keizai Shimbun, June 7, 1962.)

Landings by principal tuna fisheries as reported in the Japanese press:

Fishery	Landings	
	FY 1961	FY 1960/1
	... (Metric Tons) ...	
Skipjack pole-and-line fishery . . .	167,147	109,577
Tuna long-line fishery	351,055	322,798
Tuna mothership fishery	28,932	23,894
Atlantic Ocean tuna fishery	82,251	72,946
1/ Data from "Annual Report of Catch Statistics on Fishery and Agriculture, 1960," published by the Survey and Statistics Division, Ministry of Agriculture and Forestry.		

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FIVE TUNA VESSELS FOR CUBA:

A Japanese shipbuilding firm in Kyushu has received an order from the Cuban Government for five tuna vessels. These vessels are now being built. The first vessel will be launched on July 21 and completely outfitted by the end of August this year. Specifications of the tuna vessels are as follows: Gross tonnage--350 tons, engine--700 hp. Diesel, cruising speed--11.5 knots. (Minato Shimbun, June 20, 1962.)

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NORTH PACIFIC MOTHERSHIP
SALMON FISHERY CATCH QUOTA:

The Japanese Fisheries Agency Director announced on May 28, 1962, that the Japanese salmon catch quota of 55,000 metric tons for Area A (Treaty waters north of 45° N. latitude) agreed upon by the Soviet Union and Japan at the sixth annual meeting of the Northwest Pacific Fisheries Commission (U.S.S.R.-Japan) held at Moscow will be allocated as follows: (1) mothership-type salmon fishery--44,665 metric tons; (2) land-based gill-net fishery--10,335 metric tons. (Suisan Tsushin, May 29, 1962.)

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POSITION ON NORTH PACIFIC
FISHERIES CONVENTION:

The Japanese periodical Suisan Keizai Shimbun of June 3, 1962, states that in preparation for the forthcoming interim meeting of the Japan-United States-Canada North Pacific Fisheries Commission scheduled to be held in August this year at Honolulu, the Japanese Agriculture and Forestry Ministry and the Foreign Ministry were scheduled to meet during the week of June 3 to study the

position that the Japanese Government should take regarding renegotiation of the Japan-United States-Canada Fisheries Convention. The Japanese Government was expected to focus its attention at this time on the abstention principle contained in the Tripartite Fisheries Treaty. "...and many Japanese hold the view that the abstention principle violates the principle of freedom of the high seas and has no biological basis whatsoever," states the periodical.

The Japanese Government is expected to study this principle carefully, for the position adopted by Japan on the Tripartite Convention is expected to have an important bearing on Japan's relations with the Soviet Union, South Korea, and Communist China. The Japanese Government is also expected to give full consideration to the matter of trade between Japan and the United States, for the United States may apply pressure in the form of trade restraints should Japan decide to withdraw from the Convention.

According to Suisan Keizai Shimbun of June 9, the Japan-United States-Canada Fisheries Research Society, composed of Japanese fishery scientists and experts in international law, which was formed in Japan in 1961 to study the Tripartite Fisheries Convention problem, had held 17 meetings to date. The Society was planning to publish a report on its findings around June 20. The report contains a study of the problems related to salmon and halibut stocks, which are on the abstention list in the Convention, examination of the abstention principle in the light of international law governing the high seas, and observations based on the biology of fish. The Japanese Government plans to refer to this report as a guide in determining the position it should take with respect to its intention concerning the Tripartite Convention.

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FROZEN HALIBUT EXPORT PRICES UP:

The halibut market in Japan was reported to be very firm and active, with ex-vessel halibut prices ranging from 160-170 yen or more per kilogram (20.1-21.4 U. S. cents per pound), compared with last year's ex-vessel price of around 120 yen per kilogram (15.1 cents per pound). June export prices for frozen halibut steaks were 45-46 cents per pound c.&f. U. S. Pacific Coast. These prices are considerably higher than last year's export prices of 37-38 cents per pound for steaks

Japan (Contd.):

and around 30 cents per pound for dressed halibut. The export of frozen dressed halibut is small.

Halibut exports to the United States in FY 1961 (April 1961-March 1962) totaled 990 short tons valued at US\$568,000; in FY 1960 (April 1960-March 1961) 411 short tons, valued at US\$260,000. (Translated from Japanese periodical Suisan Tsushin, June 18, 1962.)

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KING CRAB FALL CATCH QUOTA SET FOR BRISTOL BAY:

The Japanese Fisheries Agency called the directors of the large Japanese fishing companies for a meeting on May 28, 1962, and revealed to them the Agency's policy concerning the licensing of this year's fall king crab operations in Bristol Bay. According to the Agency, two king crab freezer factoryships will be permitted to operate in Bristol Bay this fall to pack a total of 750 metric tons of frozen king crab meat.

The two fleets are being designated as Fleet A and Fleet B. Fleet A will be operated jointly by four Japanese fishing firms and will be allowed to pack 400 metric tons of frozen king crab meat with each of the four companies sharing equally in the pack. Fleet B will be operated jointly by four other Japanese firms and will be allowed to pack 350 metric tons of frozen king crab meat. Of the firms participating in Fleet B, 3 of the companies will be allotted shares of 100 metric tons each. The fourth company's share will be 50 metric tons.

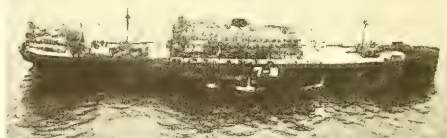
The two fleets will be permitted to depart for the Bristol Bay king crab fishing grounds after August 1 and they must return to Japan by November 30, 1962. Also, the fleets will be restricted from operating in those areas in Bristol Bay where bottom trawling is presently prohibited by the Agency. (Suisan Tsushin, May 29, 1962.)

Editor's Note: For some years, only two king crab fleets have been licensed to operate in the Bristol Bay area. They were the Tokei Maru (4,998 gross tons) fleet licensed to can king crab meat (1961 quota--80,000 cases of 48 6.5-oz. cans) and the Shinyo Maru (5,630 gross tons) fleet, whose 1961 catch quota was 200 metric tons of frozen king crab

meat. Both of those motherships operate in the Bristol Bay area in the spring and summer months.

In August 1961 the Japanese Fisheries Agency, for the first time, permitted fall king crab fishing in Bristol Bay. Six large companies were permitted to operate a total of 3 freezer vessels to process an aggregate total of 700 metric tons of frozen king crab meat, the vessels being the Banshu Maru No. 31 (1,547 gross tons), Eijin Maru (1,494 gross tons), and the Chichibu Maru No. 2 (1,500 gross tons).

Then, in December 1961, the Fisheries Agency authorized the operation of a second king crab factoryship in Bristol Bay in spring-summer 1962, and allotted a combined pack target of 130,000 cases to the two factoryships. This represents an increase of 50,000 cases over that previously allotted to the Tokei Maru, which has been operating in the Bristol Bay waters since 1953 under the joint management of 3 Japanese fishery firms. Of the two factoryships, two of the three firms are to operate jointly one factoryship with a pack target of 70,000 cases, and the third firm plus another firm are to operate the second factoryship which has been assigned a quota of 60,000 cases.



Shinyo Maru, mothership and factoryship, operates with four fishing vessels. Amidships and on poop deck can be seen large drying racks for tangle nets used by fishing vessels.

At the same time, the Fisheries Agency increased the production target of the king crab freezer vessel Shinyo Maru, operated by still another firm, an additional 100 metric tons, to a total of 300 metric tons of frozen king crab meat.

The total king crab production in Bristol Bay authorized by the Fisheries Agency in 1962 is as follows: Spring-summer 1962: two crab canning factoryships--130,000 cases of king crab; Shinyo Maru--300 metric tons of frozen king crab meat. Fall 1962: two freezer factoryships--750 metric tons of frozen king crab meat.

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Japan (Contd.):

TWO FISH CARRIERS RETURN FROM
BOTTOMFISH FISHERY IN NORTH PACIFIC:

The first carrier from the bottomfish fishing grounds in the North Pacific and Bering Sea returned to Tokyo with a load of halibut and sablefish (silver cod) the early part of June 1962, according to a translation from the Japanese periodical *Suisan Keizai Shim-bun*, June 2, 1962. The carrier was the *Banshu Maru* No. 32. It had a cargo of 450 tons of fish of which 70 percent was halibut and 30 percent sablefish or silver cod. The Tokyo Central Market readily disposed of some 1,000 boxes of the first shipment because there were no stocks on hand.

The owner of the *Banshu Maru* No. 32 decided to fix the price of halibut, for which there was a good demand, at \$452 per metric ton. But after consultation with wholesalers and jobbers, it was agreed to tentatively make it \$427 per ton. The price was some 50 percent more than last year's \$289 per ton.

The medium-size halibut was disposed of quickly. As soon as the weather improved, it was expected that both the halibut and sablefish would be sold out without difficulty as there were practically no stocks on hand then.

The same firm's second carrier loaded with 400 tons was expected to arrive later with halibut and sablefish (silver cod) as well as with other bottomfish.

MAKEUP OF BERING SEA
BOTTOMFISH FLEET:

The Japanese periodical *The Fishing Industry Weekly* of June 5, 1962, lists 19 Japanese mothership-type bottomfish fleets as having been licensed to operate in the Bering



Fig. 1 - Fish meal factoryship *Gyokuei Maru* operating in Bering Sea.

Japanese Bering Sea Bottomfish Fleet, 1962				
Mothership	Size	No. Catcher Vessels	Area of Operation	Kind of Operation
	<u>Gross Tons</u>			
No. 15 <i>Korobuki Maru</i>	-	2	ABC	Freezership
No. 11 <i>Seisho Maru</i>	-	2	ABC	Freezership
No. 22 <i>Seisho Maru</i>	-	2	ABC	Freezership
No. 2 <i>Chichibu Maru</i>	-	7	ABCD	Freezership
<i>Einin Maru</i>	7,482	10	ABCD	Factoryship (shrimp)
<i>Eiyo Maru</i>	2,600	10	ABCD	Freezership
<i>Itsukaishima Maru</i>	5,889	14	ABCD	Freezership
<i>Kaiko Maru</i>	2,940	4	ABCD	Factoryship (shrimp)
<i>Keiyo Maru</i>	3,700	16	ABCD	Freezership
<i>Seifu Maru</i>	8,269	25	ABCD	Freezership
<i>Shikishima Maru</i>	10,144	18	ABCD	Freezership
<i>Gyokuei Maru</i>	12,100	27	DE	Fish meal factoryship
<i>Kinyo Maru</i>	9,373	27	DE	Fish meal factoryship
<i>Renshin Maru</i>	14,094	29	DE	Fish meal factoryship
<i>Soyo Maru</i>	11,192	28	DE	Fish meal factoryship
<i>Shinyo Maru</i>	5,630	6	DE	Freezership (king crab)
<i>Tenyo Maru</i>	11,581	26	F	Fish meal-oil factoryship
<i>Kyokko Maru</i>	8,601	12	-	Freezership
<i>Junko Maru</i>	-	3	-	Freezership

Note: Areas A, B, C, and D include the waters in the Bering Sea between 170° E. longitude and 170° W. longitude; Area E includes waters to the east of 170° W. longitude; and Area F is the triangular area formed by a line extending from Cape Navarin to the Aleutian Islands along 180° longitude, east to Cape Sarichef, Unimak Island, and back to Cape Navarin.

Japan (Contd.):



Fig. 2 - Wooden Japanese trawler with gear in fishing position. This vessel fishing for fish meal factoryship Kinjo Maru in Bering Sea.

Sea this year. This list is by no means complete. For example, the factoryship Chichibu Maru, which departed Japan on June 6 for the eastern Bering Sea to engage in shrimp fishing, is not included.

SHRIMP FISHING OFF PRIBILOF ISLANDS, 1962:

The Japanese Fisheries Agency licensed 23 motherships to fish for bottomfish in the Bering Sea for the 1962 season as compared to 33 motherships licensed in 1961. Four motherships of the 1962 fleet (Kaiko Maru, Einin Maru, Kyoko Maru, and Chichibu Maru) have been licensed to catch shrimp in the course of bottomfish operations. Two of the motherships (Kaiko Maru and Einin Maru) are already on the shrimp grounds, located in the vicinity of the Pribilof Islands. The two motherships departed from Japan on May 1 and April 21, respectively. The other two vessels are now en route to that area.

The over-all shrimp catch target for the four vessels, as indicated in the license applications, is 17,564 metric tons. The Einin Maru catch target is 7,620 tons; Kaiko Maru, 4,400 tons; Kyoko Maru, 1,444 tons; and Chichibu Maru, 4,100 tons.

Shrimp production to May 31 totaled 1,186 tons, of which 974 tons were landed by catcher boats of the Einin Maru and 212 tons by the Kyoko Maru fleet. It is reported that on May 31, 16,080 cases of shrimp (24 8-oz. cans per case) had been packed on the Einin Maru. No information is available on quantities, if any, of shrimp processed as raw-peeled shrimp. Shrimp processing on the Kyoko Maru is limited to freezing only, ac-

cording to a June 11 report from the Fisheries Attache, United States Embassy, Tokyo.

CANNED SHRIMP PACK IN BERING SEA BY FACTORYSHIP:

The Japanese shrimp factoryship Einin Maru (7,482 gross tons), operating in the eastern Bering Sea, has produced over 100,000 cases (24 8-oz. cans) of shrimp as of June 15, 1962. At the present rate of production, the factoryship is expected to exceed its target of 300,000 cases.

The Einin Maru has been on the fishing grounds since May 1 and was producing an average of 2,500-3,000 cases of shrimp per day in early June. (Suisan Keizai Shimbun, June 17, 1962.)

BOTTOMFISH MOTHERSHIP FLEET DEPARTS FOR ALEUTIAN WATERS:

The bottomfish mothership Chichibu Maru (5,500 gross tons), accompanied by 8 catcher vessels, departed Hakodate, Hokkaido, on June 6, 1962, for Aleutian waters. The Chichibu Maru fleet will engage primarily in the production of shrimp, which it will can. The mothership is equipped with a one-line shrimp canning operation.

The same Japanese fishing company that operates the Chichibu Maru has one other mothership-type fleet operating in the Bering Sea, the Chichibu Maru No. 2 fleet, composed of the mothership Chichibu Maru No. 2 and 7 trawlers. In addition, the same firm is operating two large 1,500-ton stern trawlers, Akebono Maru Nos. 51 and 52, in the eastern Bering Sea.

The stern trawler Akebono Maru No. 50 (1,470 gross tons), also belonging to the same company, departed Japan on May 23, for the trawl fishing grounds off the coast of Australia. (Suisan Tsushin and Shin Suisan Shimbun Sokuho, June 5, 1962.)

EXPORTS OF FROZEN FISHERY PRODUCTS (EXCLUDING TUNA) TO THE U. S., FISCAL YEAR 1961:

There were some sharp declines and some sharp increases in Japanese exports of frozen fishery products other than tuna to the United States during fiscal year 1961

Japan (Contd.):

Japanese Frozen Fishery Products Exports to U. S., Fiscal Years 1960-1961		
Product	FY 1961	FY 1960
	(Short Tons)	
Frog legs	399	321
Rainbow trout	972	1,030
Shrimp	902	935
Halibut	990	411
Smelt	52	103
Black marlin	265	268
Sea bream	556	632
Cuttlefish	196	331
Octopus	909	811
Butterfish	40	61
Dolphin	356	395
Other fish	864	281
Whale meat	2,905	5,717
Crab	17	56
Oyster	59	32
Shellfish, misc.	217	170
Other products	54	3

(April 1961-March 1962), according to Suisan Tsushin of June 7, 1962.

U. S. S. R. REACTION TO CERTAIN JAPANESE FISHERY PROPOSALS:

The Japanese Fisheries Agency on June 5 published the reply from the Soviet Union through diplomatic channels on certain Japanese fishery proposals.

(1) Rejected was the proposal for Soviet permission for Japanese Hokkaido fishermen to take sea tangle or kelp in Soviet "territorial waters" around the Habomae and Shikotan Islands under a license issued by the Japan Fishery Society, with license fee eventually being paid to the Soviets. But sale of Soviet-taken sea tangle or kelp to the Japanese may be considered. Soviet Premier Khrushchev declared that entry of Japanese fishing vessels into Soviet waters absolutely could not be allowed until a peace treaty was concluded between the two countries. Reportedly, the Soviet Union's attitude represents a complete reversal of the friendly attitude that had prevailed during the talks on this subject held between Agriculture and Forestry Minister Kono and Premier Khrushchev in Moscow during this year's Japan-Soviet fisheries negotiations.

(2) The selling of fresh salmon to the Japanese was being studied by Soviet specialists. The specialists were scheduled to go to Japan by June 15, with information as to the quantity, method of sale, delivery place, etc.

(3) As to the artificial propagation of salmon in Siberian rivers, the matter will

be deliberated at the 1963 Northwest Pacific Fisheries Commission meeting, when both Japan and the U. S. S. R. would reveal their plans to each other.

(4) The Soviets are interested in the purchase of a tuna fishing fleet. Whether existing vessels would be bought or newly-built boats would be procured shall be studied by the Soviet Trade Ministry. (Translations of Japanese newspaper articles, June 6, 1962.)

PARTICIPATION IN NORTHWEST ATLANTIC FISHERIES COMMISSION BEING CONSIDERED:

The Japanese fishing industry is showing interest in the meeting of the Northwest Atlantic Fisheries Commission which convened in Moscow on June 4, 1962. Although Japanese vessels do not presently fish in the northwest Atlantic Ocean, the Japanese fishing industry feels that the Commission, consisting of 13 nations, will eventually come to exercise an important influence in guiding the world's fishery conservation policy. Therefore, Japan reportedly is considering participating in this Commission in the near future as an observer. (Minato Shimbun, June 10, 1962.)

GOVERNMENT STUDYING NORTHWEST ATLANTIC TRAWL FISHERY:

The Japanese Fisheries Agency in June 1962 was reported to have received several inquiries from Japanese firms concerning the licensing of Japanese trawling operations in the northwest Atlantic Ocean. Reportedly, the Fisheries Agency is conducting a study of the northwest Atlantic trawl fishery and is shortly expected to announce its views concerning this matter. (Shin Suisan Shimbun Sokuho, June 16, 1962.)

TRAWL SURVEY TO BE MADE IN OKHOTSK SEA:

The Japanese Fisheries Agency's research vessel Taiyo Maru No. 15 was scheduled to depart Otaru, Hokkaido, on June 17, 1962, to conduct a survey of the bottom fishing grounds in the waters off West Kamchatka. The research vessel will operate in the areas east of 148° E. longitude between 53° N. and 56° N. latitude. (Minato Shimbun, June 16, 1962.)

Japan (Contd.):

LARGE STERN TRAWLER COMPLETED:

A Japanese fishing company took delivery of its new large stern trawler Nichinan Maru (2,518 gross tons) on June 21. After a test run off Japan, the Nichinan Maru, which was constructed as a replacement for the Tatsuta Maru (561 gross tons), was dispatched to the trawling grounds off West Africa on July 2. (Minato Shimbun, June 20, 1962.)

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TRAWLERS DEPART FOR WEST AFRICA AND AUSTRALIA:

A large Japanese fishing company's trawler, the Taiyo Maru No. 56 (744 gross tons), which early in June 1962 returned from the fishing grounds off South Africa, departed Shimonoseki, Japan, for the trawl fishing grounds off northwest Australia on June 8. The same firm's 1,500-ton stern trawler Taiyo Maru No. 63 was scheduled to depart for West Africa on June 9 and will operate out of that company's base at Las Palmas, Canary Islands.

Four other trawlers, each of 499 tons gross, also belonging to the same Japanese firm, were due to arrive at Shimonoseki with capacity loads between June 11 and 23. They are the trawlers Taiyo Maru, and Taiyo Maru Nos. 2, 3, and 5, which operated off Australia since April. (Minato Shimbun, June 9, 1962.)

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HERRING BOUGHT FROM U. S. S. R.:

The Hokkaido Federation of Fisheries Cooperatives the latter part of May 1962 decided to import 1,189 metric tons (worth US\$113,000) of fresh herring from the Soviet Union. A fleet of Japanese vessels, led by the Taisei Maru (402 tons) was scheduled to sail from Wakkanai, Hokkaido, to load the fish at a Russian port.

This is the third time the Hokkaido Federation has imported fresh herring from Russia. (Suisan Keizai Shimbun, May 30, 1962.)

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STUDY OF WORLD FISHERY TRENDS PLANNED:

The Japanese Fisheries Agency is reported to be planning on launching a 3-year foreign fisheries investigation program to

analyze world fishery trends and to formulate a basic policy dealing with international fishery problems. Among the problems to be considered are fishing regulations and trade restrictions by foreign countries that are bound to affect Japan's fishing industry, as well as Japanese aid to underdeveloped countries. The Agency hopes to start the program in FY 1963 (April 1963-March 1964) and is currently preparing a budget for the program. The program will be carried out in three phases:

FY 1963--Investigation of the structures of fishery organizations in European and North and South American countries, particularly their price support systems, marketing conditions, and trends in supply and demand of fishery products.

FY 1964 (April 1964-March 1965)--Investigation of fishing ground management programs, regulatory and enforcement measures, and methods of settling disputes in foreign countries, including international fisheries commissions.

FY 1965 (April 1965-March 1966)--Investigation on extent of foreign economic aid on fishery provided by other countries of the world; investigation of foreign fishery competition (for example, trawl fishing and tuna fishing), and of technological and economic competition.

The Fisheries Agency hopes to conduct the above investigations through field investigations where possible and by subscribing to and examining foreign publications. Assistance of other Japanese Government agencies will be sought. In FY 1963, the foreign countries to be studied will be the United States, Great Britain, Canada, Australia, Germany, France, Norway, Communist China, South Korea, and the Soviet Union.

At the same time, in investigating and analyzing foreign fishery developments and trends, the Fisheries Agency hopes to undertake a study, beginning in FY 1963, of its own domestic fishery for the purpose of establishing a long-range fishery program to insure a rational development of its fisheries. (Suisan Tsushin, July 2, and Suisan Keizai Shimbun, July 1, 1962.)

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CANNED FISHERY PRODUCTS EXPORTS, 1961:

Exports of canned fishery products in 1961 dropped 7.4 percent from those in 1960.

Japan (Contd.):

Japanese Canned Fishery Products Exports, 1961 and 1960					
Product	Jan.-Dec. 1961			Total	Jan.-Dec. 1960
	To United States	To Canada	To Other Countries (Actual Cases)		Total
Crab meat	211,461	4,927	248,852	465,240	489,095
Tuna:					
In oil					
In brine	2,218,857	186,888	1,300,371	1,487,259	1,401,297
Other types	633	7,413	215,252	2,218,857	2,035,195
Mackerel-pike	9,577	170	320,590	223,298	104,822
Sardines	5,191	30	275,170	330,337	1,042,095
Horse-mackerel	45		706,971	280,391	718,645
Salmon, trout	99,601	258	1,134,591	707,016	472,378
Other fish	20,751	8,825	585,002	1,234,450	1,671,914
Shellfish	340,510	112,183	74,122	614,578	328,266
Other aquatic products	6,970	233	7,119	526,815	476,899
Total	2,913,596	320,927	4,868,040	14,322	7,391
				8,102,563	8,747,997

The decline was steep for several of the important products. Exports of canned mackerel-pike were 68.3 percent lower than in 1960; sardines declined 61 percent; and salmon dropped 26.2 percent. Declines in those products were somewhat offset by an 11-percent increase in canned tuna exports, and gains in unclassified fish and shellfish.

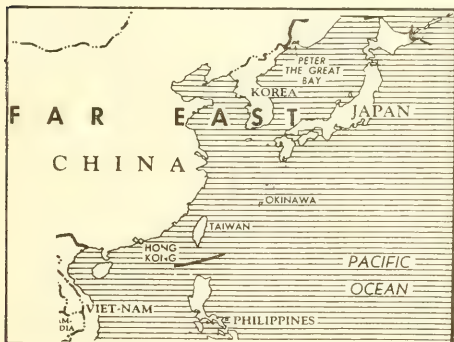


Republic of Korea

ITALY TO BUILD LARGE NUMBER OF FISHING VESSELS FOR SOUTH KOREA:

An agreement providing for the building and purchase of 950 fishing vessels from an Italian group by the Republic of Korea was signed in February 1962. Some of the details appeared in the *Tonga Ibo* of February 12, 1962.

Since the announcement in February that the Italians and Koreans were working on an arrangement whereby fishing vessels would be supplied to the Koreans from Italy, there have been discussions concerning the type and tonnage of the vessels, the country where the vessels are to be built, insurance coverage, and other functional and administrative problems. As of June 1962, an effective resolution of those problems had not been announced.



A translation of the *Tonga Ibo* news items follows.

An agreement was formally signed (February 11, 1962) between the Government and an Italian business representative to import US\$100 million worth of construction materials for fishing boats, to be financed from Italian private loans. The agreement was concluded between Korean Subcommittee Chairman Tong-Ha Kim and a representative of the Italian Trading Office, on behalf of the Italian Shipbuilding Corporation.

Under the agreement, Korea will import a total 120,000 tons of fishing vessel construction materials from Italy with loans from that country, with which some 950 vessels can be built. This inducement of foreign private loan investment is expected to make a turning point in the development of Korea's fisheries and marine industries, Kim told reporters after the signing of the agreement.

In accordance with this agreement, the Korean Government will build a shipbuilding yard to construct the planned 950 fishing vessels within three years. The Italian shipbuilding firm is to provide technical assistance for the building of the vessels under the agreement. The Government also plans to set up a fisheries and marine industry center at the shipbuilding yard by installing refrigeration, ice-making, and processing facilities for fish and other marine products.

The shipbuilding materials to be imported under the agreement will be worth more than \$100 million at world market prices. The Government will repay the loans on an annual installment basis for 7 to 8 years, at an interest rate of 6 percent per year. After all the planned 950 fishing vessels are built and operating, the annual catch of fish will be boosted from the present average of 390,000 metric tons to 620,000 tons, Kim said.

The land base for the fisheries and marine center, meanwhile, will be put under the control of the Government, and will be denationalized through gradual transfer to private business, Kim said. Further, the Government plans to form a fisheries and marine industry development committee, designed to help develop the industry. The shipbuilding materials to be imported under the agreement will build: 10 trawlers of 500 tons each and 20 of 300 tons each; 760 drag-net fishing boats of 100 tons each; 50 purse-seiners of 100 tons each; 57 line-fishing boats of 100 tons each; 3 whaling motherhips of 1,500 tons each; 10 other whaling vessels of 200 tons each; 20 other vessels of 500 tons each and 20 of 150 tons each. (United States Embassy, Seoul, June 18, 1962.



Kuwait

STATUS OF FISHING INDUSTRY:

While the Kuwait market continued in 1961 to be supplied with fish mainly by the traditional fishermen and fishing fleet, the modern commercial shrimp operation which was started in 1959 and prospered in 1960 continued to grow throughout 1961.

Of the two fishery companies formed at the end of 1960, the one with headquarters in Kuwait and Dubai remained more or less a paper company awaiting the proper international connection which could offer technical skills along with financial participation. That firm hopes to focus on the processing and packing of tuna, mackerel, and the production of fish meal and oil.

The other fishery company continued on shrimp fishing, freezing shrimp aboard the vessel, and transfer of the frozen shrimp to vessels going to the United States.

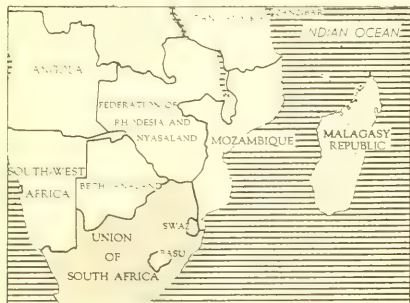
Some of the popular fish varieties on the Kuwait market were also brought in, frozen and fresh, for stocking the new retail outlet of the company which was started in the beginning of 1962. Arrangements were made to begin in 1962 the export of fish by air to neighboring countries, especially Lebanon. (United States Embassy, Kuwait, report of May 20, 1962.)



Malagasy Republic

JOINT FISHERY FIRM TO BE ESTABLISHED BY JAPAN:

An application to establish a joint company on Madagascar Island submitted by two



Japanese firms (a trading company and a fisheries company) is reported to have been approved by the Japanese Overseas Investment Liaison Council. The joint company's main office will be located at Tananariva and its field offices at Majunga and Tamatave, where cold-storage facilities exist. Reportedly, the joint company will purchase shrimp, which it will freeze, and alligators (which it will process for their hides) from local sources. The frozen shrimp and hides will be exported to the Common Market nations, and the company hopes to export some hides to the United States. (Suisan Tsushin, July 2, 1962.)



Malaya

EX-VESSEL TUNA PRICES INCREASED:

The Japanese Overseas Fisheries Company which manages the joint Japanese-Malayan tuna fishing and canning company at Penang, Malaya, held a meeting on June 9 and announced the company's new tuna purchasing prices. The prices are up from 10 to 20 percent.

	Clipper-Frozen Fish				Iced Fish			
	New		Old		New		Old	
	Yen/kg.	Ton	\$/Short Ton		Yen/kg.	Ton	\$/Short Ton	
Albacore	130	109	328	275	106	96	267	242
Yellowfin (gilled & gutted):								
20-100 lbs.	110	99	277	250	100	75	252	189
Over 100 lbs.	100	85	252	214	80	67	202	169
Indian bluefin	-	-	-	-	75	61	189	154

At the meeting, to which tuna fishermen from all parts of Japan were invited, the Overseas Fisheries Company stated that the new purchasing prices of the company were more than 20 percent higher than prices paid at other bases in the South Pacific Ocean. The company stressed the fact that fishing vessels delivering tuna to its Penang base averaged 25 days per trip, counting the days it took to unload catches, and strongly urged vessel owners to send ice-carrying tuna fishing vessels to Penang. (Suisan Tsushin, June 13, 1962.)



Mexico

SHRIMP FISHERY TRENDS, APRIL-JUNE 1962:

Mazatlan's shrimp industry in the Province of Sinaloa, Mexico, was in good shape during

Mexico (Contd.):

the second quarter of 1962. Boat owners, and the freezing and packing plants made money because of higher shrimp prices in the United States.

As a result of the very good season, plans have been made for the construction of 70 more shrimp trawlers which will cost from 500,000 to 600,000 pesos (US\$40,000 to \$48,000) each. The new trawlers are expected to be in operation during the 1963 shrimp fishing season. The closed season for shrimp fishing this year began on July 15 and will end on September 15. (Report from United States Consulate, Mazatlan, July 12, 1962.)

* * * * *

SPINY LOBSTER CATCH IN BAJA CALIFORNIA, 1961/62 SEASON:

The catch of live spiny lobsters this season along the coast of Mexico's Baja California was good, reportedly exceeding last season's production by 11 percent, or 160,000 pounds. The legal season is October 1-March 15.

These are preliminary data from Banco Fomento Cooperativo and other sources in Ensenada, where the bulk of the Baja California lobster catch is landed. Excluded is the production of four fishing cooperatives in the Territory of Baja California which do not belong to the Federacion Regional de Sociedades Cooperativas de la Industria Pesquera in Ensenada; also a great quantity of lobsters, estimated in some circles to be as high as 30-40 percent of the total reported production, which was retailed directly by fishermen outside of the cooperatives. The Federacion consists of 11 fishing cooperatives with 880 registered lobster fishermen this past season, but all together there were perhaps 2,000 families engaged in the business.

A New York City importing firm through its Los Angeles representative contracted with the Federacion for the purchase of the entire lobster production in the State this season. The contract price was 69½ U. S. cents a pound, but this appears to have been only for "medida" (young) lobsters. A price of 59½ cents was paid for "burro" (old and large) lobsters, while "colas" (tails) brought \$1.00 per pound. Outside the cooperatives fishermen were able to realize US\$5 per dozen for small lobsters and \$10 for the large ones in direct retail sales.

Legal production this season, represented by total sales to the New York City firm, amounted to 1,561,054 pounds; 78.8 percent "medida," 16.1 percent "burro," and 5.1 percent "colas." (United States Consulate, Tijuana, report of March 23, 1962.)



Morocco

SARDINE PACK TARGET FOR 1962/63 SEASON:

The pack targets for Morocco's 1962/63 season (began June 1, 1962) for sardines has been set at 2,450,000 cases. The previous season's target was 2,350,000, although actual



production was 2,550,000 cases. The carry-over on May 31, 1962, was estimated at 400,000 cases. (United States Embassy, Rabat, report of June 1, 1962.)



Netherlands

FISHERY PRODUCTS INCLUDED IN RESTRICTED IMPORT LIST:

A number of fishery items are included in a list of products subject to possible quantitative import restrictions issued by the Netherlands Government. The intent of the list puts Dutch importers on notice that certain products may be restricted without further notice if foreign competition unduly harms domestic producers.

Fishery items subject to possible quantitative restrictions include: (1) fresh, chilled, or frozen eels; (2) fresh or frozen sea fish, livers, and fish roe, except smelt and sprat; (3) herring and livers, roe and fish meal, other than canned; (4) fresh, chilled, frozen, dried, salted, pickled, or boiled shrimp in the shell; and (5) cooked and peeled shrimp, including frozen, but not otherwise prepared.

Netherlands (Contd.):

Fishing nets were among certain industrial products removed from the restrictive import list. (Foreign Commerce Weekly, June 11, 1962.)



New Caledonia

JAPANESE-FRENCH TUNA BASE PLANNED:

A large Japanese fishing company (the same one that recently submitted an application to the Fisheries Agency to establish a large tuna base at French Tahiti together with a French and United States tuna packer) reportedly is planning to establish a joint Japanese-French tuna base at Noumea, New Caledonia Island. The Noumea tuna base will be similar in size to the tuna base contemplated for Tahiti.

Plans call for the construction of a 2,000-ton capacity cold-storage plant and the operation of 35-50 tuna vessels of less than 200 tons gross. During the first year of operation, 25 vessels would be based at Noumea and their annual catch is expected to total 12,000 metric tons. Fish landed at that base will be exported to France and the United States.

Poor quality fish unsuitable for export will be brought back to Japan. Of the two tuna bases (the one at Tahiti and the other at Noumea) which the Japanese firm hopes to establish, the Noumea base will be built first because of its favorable location. (Suisan Tsushin, June 6, 1962.)



Nicaragua

SHRIMP AND LOBSTER FISHING AT CORINTO:

At Corinto, on the Pacific Coast of Nicaragua, a fishery firm has been operating since September 1961. No annual catch figures for shrimp or lobsters are available. Monthly catches of shrimp were averaging 200,000 pounds earlier this year, but as of early June had dropped to half that amount. Spiny lobsters are caught, but not in large quantity, and on an irregular basis.

There are no clearly demarcated fishing grounds off Nicaragua's Pacific Coast. Shrimp are caught all along the coast. However, particularly good areas in the past have been off Corinto and Masachapa.

No estimates of the shrimp and lobster potential in the Corinto area are available. The Government is requesting experts from the Food and Agriculture Organization to make a survey of fish resources, but it is not known when this will be completed. In the meantime, no new fishing licenses are being granted.

As many as 25 vessels were fishing out of Corinto earlier this year, but owing to labor difficulties and the temporary disappearance of shrimp a number have gone to Guatemala. As of early June, 11 vessels were fishing for the fishery firm at Corinto. The firm is establishing a plant at Corinto with a capacity of 30,000 pounds per day. A second company is building a plant farther south on the coast at Puerto Somoza. (United States Embassy, Managua, June 15, 1962.)



Nigeria

JAPANESE PLAN TO ESTABLISH FISHING BASE:

A large Japanese fishing company, which has been working on a plan to establish a joint fishing base at Lagos, Nigeria, since October 1961, is reported to have the support of the Japanese Foreign Ministry, which wants to promote trade between Japan and Nigeria. Also, prospects of the firm obtaining a loan from the Economic Cooperative Fund, a government fund established in February 1960 to promote development of Japanese business enterprises in underdeveloped countries, are reported good.

For this joint venture, Japan is to contribute 30 percent of the investment and Nigeria 70 percent. The Japanese investment will be shared between the Japanese fishing firm and a steel import-export firm. For the present, the fishing firm's investment will include two two-boat trawlers (*Akashi Maru* Nos. 23 and 25) each of 75 gross tons, which the firm hopes to dispatch to Lagos as soon as final agreement is reached with Nigeria. Eventually, a total of six two-boat trawlers are scheduled to be assigned to that base, where, under

Nigeria (Contd.):

present agreement, a 500-ton capacity cold-storage plant is to be constructed.

To conclude final arrangements for the proposed joint venture, the Japanese fishing firm planned to send a representative to Nigeria toward the end of July. (Minato Shim-bun, July 15, and Shin Suisan Shim-bun Soku-ho, July 7, 1962, and October 27, 1961.)



Norway

NEW MACHINE SORTS HERRING BY SIZE:

A machine which will separate herring according to the length of each fish is under development in Norway. Work on the prototype has been going on during the last two years, and the first tests took place in June 1962. The machine is expected to go into production soon. The price is likely to be about \$2,800. It is designed for installation as a stationary land-based unit.

A machine which will feed the herring into the automatic sorter is also expected to be ready for testing soon. (Fish Trades Gazette, June 30, 1962.)

SOVIET-NORWEGIAN FISHERIES AGREEMENT RATIFIED:

The Norwegian Parliament has sanctioned ratification of the fisheries agreement between Norway and the Soviet Union. Although the approval was unanimous, both Labor and opposition speakers voiced the opinion that the pact could have been much more advantageous for Norway.

The chairman of the Norwegian Fisheries Committee said the Committee unanimously urged ratification only as a means of assuring good relations between the two countries, which might lead to more effective regulations for protecting the young fish stock in the Barents Sea.

Norway's Foreign Minister declared that Soviet recognition of the new Norwegian fisheries zone was the main reason why the Government had urged that the pact be ratified. He also pointed out that both countries would have possibilities for suggesting revisions if fundamental changes should occur in fishing conditions.

The fisheries agreement, which extends to October 31, 1970, permits Soviet fishing vessels to operate in a 6 to 12 mile zone off the Norwegian coast. Norwegians may fish in Soviet territorial waters in the Varangerfjord between 6 and 12 miles, and also in an 8 to 12 mile zone off the Soviet coast. The privilege of fishing in the 8 to 12 mile zone will be granted as long as Soviet vessels are allowed to load and unload at a distance of 4 miles off Jan Mayen Island. (News of Norway, June 28, 1962.)

WINTER HERRING CATCH AGAIN VERY LIGHT:

For the fifth consecutive year the traditionally rich Norwegian winter herring season was a virtual failure. The 1962 winter herring catch is expected to amount to 70,000 metric tons as compared to a 1-million-ton catch five years ago. Although the fishermen were prepared for a poor season and did not suffer the financial loss experienced in the immediately preceding years, the loss of the traditional substantial income from the export of herring, in its many forms, was again a blow to the Norwegian economy.

Long-term projections indicate that the present development in the herring fishery is part of a cycle and that the winter herring will continue to move farther north and reach the Norwegian coast in smaller numbers for some time to come.

The Norwegian Government is trying to encourage larger and more efficient fishing vessels and equipment in order to improve the annual fish catch. (United States Embassy, Oslo, report of June 12, 1962.)

FISHERY TRENDS, FIRST QUARTER 1962:

Lofoten Cod Fishery: Participation in this fishery of North Norway (which in recent years has averaged about 9,000 fishermen as against up to 30,000 in a really good season of yore) is now down to a low of some 7,000 fishermen, manning 2,144 vessels.

Antarctic Whaling: Norway's seven expeditions this season produced 285,130 barrels of whale oil in the first 68 days of the 116-day season. This was 64 percent of the quantity which the same expeditions produced in the same number of days last season.

Norway (Contd.):

Fisheries Delegation to Nigeria: A Norwegian fisheries delegation in March 1962 left for Lagos, Nigeria, to study tuna fishing off West Africa as well as fish distribution and harbor conditions. (News of Norway, March 22, 1962.)

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STATUS OF FISHERIES, 1961:

Landings: Norway's total landings of all fishery products in 1961 amounted to 1.3 million metric tons valued at 674.6 million kroner (US\$94.4 million) ex-vessel. Compared to 1961, the 1960 catch was about the same, but the ex-vessel value was down about 10 million kroner (US\$1.4 million).



Part-time fisherman in Norway casting off to check his lobster pots.

Unfavorable weather conditions to some extent accounted for the further drop of winter herring catches to 69,000 tons--less than one-fourth of the 1960 catch, and only about 6 percent of the 1956 record catch. On the other hand, the capelin fishery in Northern Norway was good--it started in the second half of February and lasted until mid-April. A total of 217,000 tons of capelin were landed in 1961 as compared with about 93,000 tons in 1960. The fat content of capelin proved to be unusually high, up to 12 percent as against the usual 4 to 6 percent. The fat herring fishery catch increased more than 70 percent, while the small herring fishery in the North Sea was more or less unsatisfactory, partly on account of unfavorable weather conditions.

Norway's cod fisheries improved in 1961 and cod production (including byproducts) reached a total of 252,100 tons. During the

Finnmark cod fishery, 140 trawlers landed 33,700 tons out of a total of 77,400 tons. Some 1,800 other vessels participated in that fishery.

The general trend in the Norwegian fisheries is that the setback resulting from the failing winter herring fishery is being gradually overcome through intensified activities in other fisheries. Norway's fisheries for species other than winter herring have been showing steady progress for years, with the ex-vessel value increasing by more than 90 million kroner (\$12.6 million) since 1958.

New stern trawlers built or being built in Norway and abroad for Norwegian owners are considered important stages in the development of the Norwegian fisheries.

Exports: The value of Norway's exports of fish and fish products in 1961 of 875 million kroner (US\$122.5 million) was down about 5 percent as compared with that for 1960 of 925 million kroner (\$129.5 million). Exports of fresh, frozen, and salted herring products were lower in 1961 because of the drop in winter herring catches. Also, klipfish and stockfish exports dropped considerably, with klipfish exports dropping from 30,000 tons in 1961 to 23,000 tons in 1960. Exports of herring meal and fish meal increased because of larger capelin and herring catches in Northern Norway, and successful herring fishing by Norwegian vessels in Icelandic waters.

Exports by the Association of Norwegian fish filleting plants (Norsk Frossenfisk A/L) have increased steadily, according to a statement by the Managing Director of the Association. The increase was from 28,000 tons in 1960 to 33,000 tons in 1961. The 1961 exports were valued at 115 million kroner (\$16.1 million). A further increase to 40,000 tons is expected in 1962. Sales by the Association increased on the domestic market and all foreign markets. (Norwegian Fishing and Maritime News, No. 4, 1961.)

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FISHERMEN'S 1960 AVERAGE EARNINGS:

A statistical study in Norway of fishermen's earnings in 1960, covering about 6 percent of all Norwegian fishermen, showed an average annual income of Kr. 8,109 (US\$1,134) per man. This was 3.7 percent more than in 1959. (News of Norway, April 5, 1962.)

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Norway (Contd.):

STERN TRAWLERS BEING BUILT FOR OFFSHORE FISHING:

A Norwegian cooperative company owned by fish filleting and freezing plants in Finmark and North Troms in June 1962 accepted delivery of the 984-gross-ton stern trawler Hans Egede, Norway's largest fishing vessel. The Kr. 7.3 million (US\$1.0 million) craft, which has an over-all length of 220 feet, was built at Bremerhaven, Germany. In September 1962, the West German shipyard will deliver a sister vessel also to the same company.

Hans Egede is one of the seven ocean-going stern trawlers recommended for construction by a committee of the District Development Fund to provide fresh fish for North Norway freezing plants. Between 30 and 40 percent of the building cost will be financed by the Development Fund.

Construction of the 630-gross-ton Hekktind, owned by a firm at Melbu was also made possible through assistance from the Fund. The 151-foot long stern trawler was designed and built by a Bergen firm.

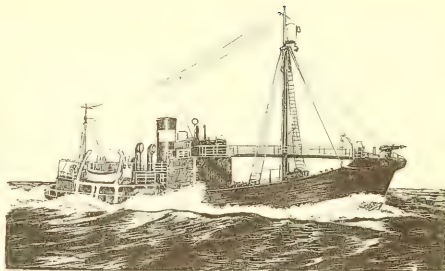
The shipyard at Aalesund will soon launch a specially designed stern trawler for delivery to the local fishing company. The 900-gross ton factory vessel will be able to operate for up to 4 months in distant waters before returning with some 400 tons of frozen fillets. (News of Norway, June 14, 1962.)

STERN TRAWLER HAS DEVICE TO RECORD POSITION AND OPENING OF TRAWL NET:

The stern trawler Hekktind is the first fishing vessel in Norway to install a trawl "sonde," a device which together with the echo depth-sounder makes it possible to record the gear-bottom distance and controls the opening of the trawl. (News of Norway, April 5, 1962.)

NATIONAL WHALE QUOTA FOR 1961/62 ANTARCTIC SEASON:

In October 1961, Norway established a national whale quota of 5,100 blue-whale units for the Norwegian expeditions participating in the 1961/62 Antarctic whaling season. The quota was 700 units less than the



A catcher boat used by Norwegians during Antarctic whaling expedition.

previous season, reflecting the number of units transferred to Japan with the sale of the Norwegian Kosmos III expedition. Seven Norwegian whaling factory vessels, using 71 whale catching boats, took part in the current season. (United States Embassy, Oslo, March 13, 1962.)

WHALE AND SPERM OIL PRODUCTION FOR 1962 IS DOWN:

The final results of the 7 Norwegian pelagic Antarctic whaling expeditions indicate a 15-percent decline in the output of whale and sperm oil in 1962. The Norwegian expeditions produced 498,717 barrels of whale oil and 19,587 barrels of sperm oil during the 117 days of this year's Antarctic whaling season. Production last season, which was 16 days shorter, was 590,752 barrels of whale oil and 67,511 barrels of sperm oil, if the output of Kosmos III fleet, which was sold to Japan, is discounted.

The drop in whale oil prices this year also contributed to reduced income from whaling, and added to the general pessimism as to the continued profitability of pelagic whaling. (United States Embassy, Oslo, report of June 12, 1962.)

WHALE OIL PRICES LOWER IN 1962:

Norwegian whaling companies sold 41,000 long tons of their 1961/62 whale oil production by mid-year of 1962, leaving over 42,000 tons which were then still unsold. About mid-year, 24,000 tons were sold to the largest British buyer and user at £45 (about US\$126) per long ton (about 5.6 U. S. cents a pound),

Norway (Contd.):

which was 30 percent below the 1961 price.
(News of Norway, June 28, 1962.)



Peru

EXPORTS OF MARINE PRODUCTS,
JANUARY-MARCH 1962:

Peruvian Exports of Principal Marine Products			
Marine Products	January-March 1962		
	Quantity	Value \$/	
	Metric Tons	Million Soles	US\$ 1,000
Fish meal	343,430	844.8	31,499
Fish (frozen, canned, etc.)	7,843	55.7	2,077
Fish oil	40,796	107.1	3,993
Sperm oil	2,463	8.6	321
Fertilizer (guano)	4,019	10.8	403
Whale meal	1,054	1.7	63

1/F.O.B. values, converted at rate of 26.82 soles equal US\$1.



Philippines

UNITED STATES FIRM SEEKS DANISH
CUTTERS FOR PHILIPPINES:

A United States canning company of California has been negotiating with fishing vessel owners in Skagen, a Danish fishing port in North Jutland, Denmark, to participate in fishing operations in the Philippines. The company is seeking 4 Danish cutters of over 100 tons each, 3 to fish for sardines and 1 for shrimp. Later, the number of cutters may be increased to 18 with vessels of 50-60 tons being considered. Vessel charters would be for three years. Danish crews would be signed for a year, although it is hoped the skippers and engineers would remain for a three-year period. Provisions of a preliminary contract provide for payment of \$12 per ton for fish, the cost of the trip to the Philippines and back, and the daily cost of ice and boxes.

Catches will be delivered first to a her-ring reduction plant and later to a canning plant which is being constructed by the United States firm in cooperation with the largest fisheries company in the Philippines. During the first year the vessels will carry full Danish crews. Thereafter, Philippine crew members will be carried and trained in the fisheries. The company's wish that the cutters sail under the flag of the Philippines and oth-

er contract provisions are still under discussion. (Fisheries Attache, United States Embassy, Copenhagen, July 4, 1962.)



Portugal

SELECTED FISHERY LANDINGS, 1961:

Portugal's 1961 sardine landings of 135,204 metric tons were up 2.4 percent from the previous year's 131,972 tons. But the ex-vessel value of the landings--403.9 million escudos (US\$14.0 million)--dropped 12.5 percent from 1960. Except for 1958, the quantity of the sardine landings in 1960 was the highest in 10 years. Of the sardine landings, 74,461 tons were used for canning. The cannery paid 235.3 million escudos (US\$8.2 million) for that amount, or almost \$110 a metric ton.

Landings of chinchards in 1961 totaled 41,867 tons, a 20-percent increase from the previous year's 35,143 tons. The anchovy landings of 9,498 tons in 1961 were more than double those in 1960 when 3,992 tons were landed.

Matosinhos ranked as Portugal's foremost sardine port in 1961 with 96,074 tons, an increase of 15 percent from the previous year. Peniche followed as the second largest sardine port with 13,588 tons, or 10 percent more than in 1960. But sardine landings of only 8,691 tons at Portimao were about 35 percent lower than in 1960.

Although Portugal's sardine landings and pack were at a record high, 1961 did not turn out to be as profitable as anticipated. Both the quantity and value of canned sardine exports were also at a record high in 1961. The lower profits to the canning industry in 1961 were partly attributed to unstable prices and some defects in selling policy.

Portugal's canned fish pack (in oil and in brine) in 1961 totaled 84,000 tons. (Conservas de Peixe, April 1962.)

Notes: (1) See Commercial Fisheries Review, May 1962, p. 67.
(2) Values converted at rate of 28.80 escudos equal US\$1 in 1961.

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OUTLOOK FOR CANNED
SARDINE MARKET IN 1962:

The Portuguese outlook for a successful 1962 canned sardine pack depends to a large extent on the availability of medium-size fish.

Portugal (Contd.):

This size fish is canned 6 to 8 fish to the $\frac{1}{4}$ -club can, which is the type of pack preferred by Great Britain, Germany, and Belgium.

The Moroccan canned sardine industry has offered considerable competition to Portugal because of lower prices. Moroccan exports of canned sardines to Italy increased greatly in 1961. This has been viewed as a trend that might spread to other of Portugal's present markets, unless some action is taken to stem the tide. The danger, from the Portuguese point of view, is even greater because of its high production costs.

Other countries increasing their canned sardine production include Spain, which has in the past two years redoubled its efforts to place her surplus in foreign markets.

Portugal's frequent price fluctuations for canned fish are unfavorable to its export trade. When there is a drop in the rate of exchange, which occurs often, importers feel the full effects. This understandably cuts down buying of the Portuguese products and causes prospective buyers to turn to other countries with more stable prices.

More collaboration between Portugal's fishing and the canning segments of the industry is sought if their mutual economic interests are to improve. (Conservas de Peixe, April 1962.)

Note: See Commercial Fisheries Review, May 1962 p. 67.

FROZEN FISHERY PRODUCTS EXPORTS, 1961:

Portugal's exports of frozen fishery products in 1961 amounted to 1,748 metric tons. Sardine with 657 tons was the largest single frozen fish species exported--more than one-third of the total frozen fish exports. Among other frozen fish and shellfish exported by Portugal were: tuna (23 tons), swordfish (13 tons), and spiny lobster (2 tons). (Conservas de Peixe, April 1962.)

CANNED FISH PACK, JANUARY-MARCH 1962:

Portugal's total pack of canned fish in oil or sauce for the first quarter of 1962 was up 4.5 percent as compared with the same period in 1961. The sardine pack and the anchovy fillet pack combined accounted for 87 percent

of the total pack, and those packs were about the same as the previous year. The canned tuna pack in the first quarter of 1962 was more than double that of the comparable period in 1961 and accounted for practically all of the increase.

Canners in the main producing areas were working at capacity during February-March, with the March pack of anchovy fillets (60,000 cases) exceeding the February pack by 17.6 percent. The total pack of all canned fish in oil or sauce during March 1962 was up 24 percent as compared with the previous month.

Products	Jan.-Mar. 1962		Jan.-Mar. 1961	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
<u>In Oil or Sauce:</u>				
Sardines	1,699	89	1,715	90
Chinchards	27	1	17	1
Mackerel	22	1	32	1
Tuna and tuna-like	428	14	178	6
Anchovy fillets	1,701	170	1,718	172
Others	29	1	78	4
Total	3,906	276	3,738	274

Landings of sardines started to fall off by the end of the first quarter, and prices for anchovy fillets were high. (Conservas de Peixe, May 1962.)

CANNED FISH EXPORTS, JANUARY-MARCH 1962:

Portugal's exports of canned fish during the first quarter of 1962 dropped 8.6 percent from the same period in 1961. Sardines accounted for 81.3 percent of the 1962 exports of canned fish, followed by anchovy fillets with 11.1 percent. The sardine pack during the first 3 months of 1962 was down from the same period the previous year, but the mackerel pack was three times greater than in 1961.

Product	Jan.-Mar. 1962		Jan.-Mar. 1961	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
Sardines	12,226	643	13,753	723
Chinchards	310	16	277	14
Mackerel	290	12	95	4
Tuna and tuna-like	487	16	570	20
Anchovy fillets	1,664	166	1,685	169
Others	67	3	88	4
Total	15,044	856	16,468	934

Portugal's principal canned fish buyers during the first quarter of 1962 were Germany with 2,510 metric tons, followed by the United States with 2,058 tons; United Kingdom with 1,835 tons; France, 1,514 tons; and Italy, 1,437 tons. (Conservas de Peixe, May 1962.)



Seychelles

ESTABLISHMENT OF TUNA INDUSTRY UNDER STUDY:

The East African Standard of June 29, 1962, carried a brief article concerning the possible establishment of a tuna fishing industry in the Seychelles, a large group of islands in the Indian Ocean off the east coast of Africa.

Two representatives of a Geneva firm visited the Seychelles this summer to investigate the feasibility of setting up a base for deep-freezing for export of tuna and similar types of fish now caught by Chinese and Japanese fishing vessels. Since these vessels work farther afield than the local fishing boats, it is not expected that the use of the Chinese and Japanese catch would adversely affect the local Seychelles fishing industry.

The company's representatives are said to envisage the construction of a 1,000-ton cold-storage plant and the operation of approximately 10 fishing vessels of the 100-ton class. Twenty percent of each vessel's crew will be Seychellois. As more are trained, it is expected that Seychellois eventually will take over the running of all the vessels. The company also feels that at a later date it might build a tuna cannery and finance the construction locally of tuna fishing vessels capable of operating within a range of 500 miles. (United States Consulate, Nairobi, report of July 3, 1962.)



Spain

BILBAO FISHERIES TRENDS, FIRST QUARTER, 1962:

Landings of anchovies in the Bilbao area of Spain were very good during the fishing season which opened March 19, 1962. Wholesale prices of these earlier than usual catches ranged from 8.50 pesetas a kilo (6.4 U. S. cents a pound) down to 3.00 pesetas a kilo (2.3 U. S. cents a pound). These were all sold for immediate consumption because the price was too high for the canners.

The Fishermen's Brotherhoods of Vizcaya, Guipuzcoa, and Santander, for the second consecutive year voluntarily agreed to limit anchovy catches, and to maintain minimum sale prices. The minimum price was fixed at 2.00 pesetas a kilo (1.5 U. S. cents a pound),



Unloading anchovies from the hold of a Spanish anchovy auxiliary craft.

or about 20 U. S. cents per 100 pounds more than in 1961. The daily maximum catch limit per vessel was fixed at 8 metric tons. Transfer of anchovy catches from one vessel to another while at sea was prohibited. Vessels were permitted to fish anchovies from 12:00 noon on Monday through 1:00 p.m. on Saturday.

Although representatives from Lugo Province were not present in Bilbao when the agreement was reached on February 17, 1962 (it entered into force on March 19, when the season officially started), it was reported they would support and accept the agreement. Oviedo's acceptance was taken for granted at the meeting. The Comisaria de Abastecimientos y Transportes promised to consider buying surplus fish at the minimum sale price for marketing in inland provinces.

Spain's tuna fishery in African waters was to end on March 31, but there were indications that the fishing fleet would remain longer, probably through April. The vessels were then to return to their home ports and prepare for the albacore and tuna fishing season in the waters of northern Spain. This would mean those fishing vessels will have adopted a cycle of fishing for tuna in African waters from December through April, and in northern Spain from May through November. The anchovy fishing season in Spanish waters would then be left to smaller vessels, and those which have not yet attempted sailing to Africa because of the higher operating costs involved.

The recent regulations concerning the law on the Renovation of the Fishing Fleet received mixed reactions. One opinion was that, at least up to now, the large proportion of

Spain (Contd.):

small fishing vessel operators is not enthusiastic about its application because they are afraid the large firms will get most of the benefits. Another opinion was that the small operator would be reluctant to scrap his old vessel since the construction of a new one involves a substantial investment which he cannot afford. Added to that is his belief that any request for credit would not be approved. Also, the rate of interest is high, and the terms for the refund of the loan too short. Other sources state they are prepared to renovate their fishing fleet even without government subsidies, and have ordered the construction of new vessels. Such vessel owners are encouraged and satisfied with the regulations under the law for governing the Renovation of the Fishing Fleet. It was even added that some shipowners would be satisfied with a subsidy of only 50 percent of the value to be repaid in 10 years at 4 percent interest. Further, these shipowners believe that the terms of the present law might encourage new vessel owners, who formerly were inactive, to join and give financial support to those already familiar with fishing operations.

Regardless of the views held, it appeared that the new law resulted in a temporary work slump in small shipyards. It also prompted some prospective vessel owners to have further construction halted so as to take advantage of any benefits under the new law.

A new fish-packing plant in Bilbao, and a cold-storage plant in Bermeo, Vizcaya, were placed in operation during the first quarter of 1962. These were planned as an improvement in local handling facilities. (United States Consulate, Bilbao, April 6, 1962.)



U.S.S.R.

FISHING IN NORTHWEST ATLANTIC SOUTH OF NOVA SCOTIA:

In 1962, the Soviets started commercial fishing in the International Commission for the Northwest Atlantic Fisheries (ICNAF) subarea 4, south of Nova Scotia between the Grand Banks and Georges Bank. Up to early June this year, a total of 15 Soviet vessels fished in that area and produced 7,000 metric tons of fish, mostly groundfish. In previous

years, Soviet fishing in that area was limited to exploratory fishing. (Proceedings of Annual Meeting, ICNAF, Moscow, June 1962.)

* * * * *

NEW BALTIC FISHING PORT:

Construction was begun in mid-1962 on a large fishing port in the Baltic Republic of Estonia. The port, located at Tallinn on the Gulf of Finland, will accommodate the largest vessels in the Soviet fishing fleets. Included in the 175-acre facility will be cold-storage and canning plants. (*Le Marin*, newspaper, Rennes, France, June 8, 1962.)

* * * * *

FISHING INDUSTRY URGED TO PRODUCE MORE:

The Soviet Council of Ministers and the Communist Party Central Committee recently criticized the fishing industry's past performance and called for increased productivity. To meet this call and to fill the Soviet need for more food, crews will be trained in methods of fishing and processing catches on designated "demonstration" vessels.

In the Kamchatka area of the North Pacific, a fleet of several vessels has already been designated to demonstrate fishing for ocean perch, herring, and flounder. (Press reports and unpublished sources.)

* * * * *

OCEANOGRAPHIC RESEARCH IN INDIAN OCEAN:

The *Vityaz* of the Oceanology Institute, U. S. S. R. Academy of Sciences, left Vladivostok in late June 1962 for oceanographic research in the Eastern and Central Indian Ocean. The vessel, participating in the international study of the Indian Ocean, will make summer observations for comparison with data obtained in previous winter voyages.

Scientists from India, Indonesia, and Ceylon, and "four stipendiaries of the United Nations" will be aboard on the 150-day voyage. Also on board for short periods will be scientists from Australia, Japan, and Great Britain. (Unpublished sources.)

* * * * *

TALKS ON COOPERATION BETWEEN FISHING INDUSTRIES OF RUSSIA, POLAND, AND EAST GERMANY:

A Soviet fish industry delegation, headed by the State Committee on Fisheries Chair-

U. S. S. R. (Contd.):

man, left Moscow June 22, 1962, for Warsaw. According to Pravda (June 23), talks will be held with Poland and East Germany regarding an agreement on cooperation between the fishing industries of the three countries. (United States Embassy, Moscow, June 29, 1962.)

* * * * *

STUDIES ON PRESERVATION OF FISH, 1961:

During 1961, studies were carried out at the VNIRO (Soviet Institute for Fishery and Oceanography) and the NHRMP (Institute of Scientific Research for the Mechanization of the Fishing Industry) to establish a theory for the cold preservation of fish and to improve the techniques of chilling and freezing.

Heat and mass transfer methods were tried for freezing fish in air under different conditions (different temperatures, humidities, and air speeds). There were also organoleptic studies into biochemical and chemical-physical changes in fish tissue on cooling, freezing, and cold storage, and into their relationship with fish of a given quality. During the studies, special attention was devoted to the definition of the effect of the thawing method on the quality of the fish.

A study was made of the possible use of antibiotics for extending the storage life of chilled fish. Experimental work in this field was carried out to determine (1) the efficiency of ice when using chlortetracycline during the transport of fresh fish on board vessels; (2) the decomposition during subsequent use (cooking, baking, canning, smoking, and salting) of chlortetracycline penetration in the fish; other antibiotics that can be used for fish storage. (*Bulletin de l'Institut International du Froid*, Tome XLII, No. 2, 1962.)



United Kingdom

CANNED SALMON IMPORTS LOWER IN 1961:

The United Kingdom total canned salmon imports from all countries in 1961 amounted to 52.6 million pounds valued at US\$42.8 million. This was a 27-percent drop in quantity and a 29-percent drop in value from the 72.1 million pounds valued at \$60.1 million imported in 1960.

Canned salmon exports by the United States in 1961 amounted to 7.2 million pounds of which 3.9 million pounds went to the United Kingdom. In 1960, the United Kingdom received 8.3 million pounds of the 11.9 million pounds of canned salmon exported by the United States.

* * * * *

LIVE FRESH-WATER CRAYFISH IMPORTED FROM RUSSIA:

A London food importer in the first half of this year imported a shipment of live freshwater crayfish from Russia. Better known as "ecrevisses," these shellfish, which have not been brought to England in many years, were distributed to the catering trade by an English food firm.

Among the first to receive supplies of the new arrivals were the Savoy Hotel, London, and a group of restaurants. The subsequent demand was so great that further quantities were ordered immediately.

The crayfish were caught in the lakes and rivers of White Russia near Vitebsk. They were then taken by motor trucks to the nearest airport, and flown to London in pressurized containers.

The shellfish seemed to be no worse for the experience, as all of the first consignment arrived alive. (*Fish Trades Gazette*, June 16, 1962.)



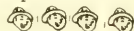
Venezuela

CANNED SARDINE ESTIMATED PACK FOR 1962:

The President of the Asociacion de Pescadores de Margarita, who is familiar with the canned sardine situation as a result of a recent trip to the United States, anticipates a Venezuelan canned sardine pack for calendar year 1962 of about 800,000 cases (100 cans per case, $3\frac{3}{4}$ ounces per can).

However, he states that the pack could be increased without undue difficulty to 1.5 to 2 million cases since the industry is operating only at 50 percent capacity. The major problems to boost production would be rapid procurement of sufficient oil and sheet metal and absolute guarantee of market by a reliable private or public organization.

Big catches of sardines off Venezuela began around mid-June. (United States Embassy, Caracas, report of June 12.)





FEDERAL ACTIONS



Department of Health, Education and Welfare

FOOD AND DRUG ADMINISTRATION

MAJOR OVERHAUL PROPOSED OF SPECIAL DIETARY FOOD REGULATIONS:

A major overhaul of the Nation's special dietary food regulations was called for on June 20, 1962, by the U. S. Food and Drug Administration. The proposals aimed at changing these regulations were published in the June 20 Federal Register. Interested persons were invited to submit comments in writing within 60 days.

The regulations would cover vitamin, mineral and other dietary supplements, baby foods, foods for the elderly, low-sodium foods, low calorie and artificially sweetened foods, protein supplements, hypoallergenic foods, foods for use in dietary management of disease, and all other foods represented as having special dietary properties.

The objective of the regulations is to assure the public that special dietary foods are offered for what they actually are, with complete information to facilitate intelligent purchasing and use.

The proposed regulations are designed to provide the consumer with complete and reliable labeling information which will enable him to select and purchase special dietary foods of all kinds. This will help to eliminate false and misleading claims.

Following is a summary of the principal changes which would be made by the proposed regulations.

Foods Offered as Vitamin and Mineral Sources: Under the present regulations foods represented as sources of any of 6 specified vitamins and 4 minerals known to be needed in human nutrition must be labeled to show the proportion of the "minimum daily requirement" that is present. The term "minimum daily requirement" has been frequently misunderstood by consumers, and has encouraged some manufacturers to add needlessly large amounts of some vitamins and minerals. In the proposed regulations the term "daily requirement" is used in place of "minimum daily requirement."

Foods for Use in Reducing or Weight Control Diets: Such foods would be required to state the number of calories in a one-day supply or in one unit if the food is in wafers, tablets, capsules, etc. The amount in grams, of protein, fat and carbohydrates consumed in a one-day supply would also be stated.

Foods for reducing would be required to bear this prominent label declaration: "Useful only when used as a part of a calorie-controlled diet."

To be described as "non-fattening" a food could contain not more than 5 calories in a serving or 10 calories in a one-day supply.

To be described as "low calorie" a food could contain not more than 15 calories in a serving or 30 calories in a one-day supply.

To be described as "lower in calories" the label would be required to state the name and caloric content of the food with which it is compared.

Protein Sources: Protein consumption in the United States is over 100 grams per person daily whereas the average adult needs only about 30 grams daily of the proteins supplied by the ordinary diet. The proposed regulations would require foods offered as sources of protein to be labeled in terms of their protein quality and quantity. Specifications that entitle a food to be described as "excellent" or "good" dietary sources of protein, are proposed. Foods which do not meet these specifications could not bear protein claims.

Low-Sodium Foods: Only minor changes are proposed in the existing regulations on labeling of those products. Medically insignificant amounts of sodium would not be required to be shown on the label of low-sodium food items.



Department of the Interior

INTERIOR MEMBERS APPOINTED TO COMMITTEE ON FISHING VESSEL CONSTRUCTION:

Six Department of the Interior officials to represent the Department on the joint Congressional-Interior Committee on Fishing Vessel Construction were appointed by the Secretary of the Interior. The names were announced on July 3, 1962. They are Donald L. McKernan, Director, Bureau of Commercial Fisheries; Harold E. Crowther, Assistant Director, Bureau of Commercial Fisheries (alternate); Charles H. Vaughn, Assistant Solicitor for Fish and Wildlife, Office of the Solicitor; Max N. Edwards, Legislative Counsel, Office of the Secretary; Thomas D. Rice, Special Assistant to the Commissioner for Fish and Wildlife; Ralph Curtiss, Resources Staff Officer (Legislation), Bureau of Commercial Fisheries; and C. E. Peterson, Chief, Branch of Loans and Grants, Bureau of Commercial Fisheries.

Congressional committee members, announced earlier, are August J. Bourbon of the staff of the Senate Committee on Commerce, and Capt. Paul Bauer, staff member of the House Merchant Marine and Fisheries Committee.

The joint committee will review the Fishing Vessel Construction Differential Subsidy Program, authorized by P.L. 86-516, which is due to expire in 1962, and will discuss the over-all problems in the fishing industry in efforts to find solutions.

The cost of constructing fishing vessels in certain foreign countries is 40 to 50 percent lower than in American shipyards, but Federal laws prohibit American fishermen from purchasing foreign-built vessels for use in domestic fisheries. The Fishing Vessel Construction Differential Subsidy Act authorizes the Secretary of the Interior to pay up to one-third the cost of building a new fishing vessel, provided certain requirements are met. To be eligible for a subsidy, a vessel must be designed to operate in a fishery which has received a finding of injury because of increased imports. The New England groundfish fishery is the only one now meeting this requirement.

The committee will discuss developments since the program has been in effect, operation of the program, need for expanding or modifying the vessel-construction program, and methods of providing assistance to the fishing industry through construction of new fishing vessels.

FISH AND WILDLIFE SERVICE

BUREAU OF COMMERCIAL FISHERIES

NEW PAY PLAN APPROVED FOR ALEUT RESIDENTS OF PRIBILOF ISLANDS IN ALASKA:

A new pay plan effective July 1, 1962, provides that all Aleut residents of the Pribilof Islands in Alaska employed under the Fish and Wildlife Service's Bureau of Commercial Fisheries Fur Seal Program will receive compensation determined in accordance with the pay structure of the Federal Civil Service, the U. S. Department of the Interior announced on June 25, 1962.

This determination of rates of compensation will be made under the provisions of the Classification Act of 1949, as amended, or under the Wage Board or Administrative Procedures established by the Department of the Interior. Special provisions are included for sealing crews whose pay rates will be established on the basis of wage board rates for laborers, plus the application of a percentage differential in recognition of the levels of work involved.

The former practice of partially subsidizing the cost of housing, food, fuel, and supplies for the Aleuts will be discontinued with the inception of the higher rates of compensation. The original Compensation Plan of 1949 and the revised plan of 1954 have been essential and effective steps in making possible the transition from the earlier economy of the Islands when all payments to the inhabitants were made in the form of Government-furnished housing, food, clothing, schooling, medical care, and the like, the Department said.

With the completion of this successful transition, resident Aleuts employed by the Bureau can be compensated in the future on the same basis and under the same laws, rules, regulations, and policies as other Department employees. The islands of St. Paul and St. George in the Pribilofs have about 600 residents. However, not all are employed by the Bureau.

* * * * *

PROSPECTUS ISSUED ON ALASKA FUR-SEAL PROCESSING:

An "Invitation for Proposals" and "Prospectus" for processing and selling Alaska seal skins for the account of the United States Government was issued on June 22, 1962, by the U.S. Department of the Interior.

The Bureau of Commercial Fisheries of the Department manages the fur-seal herd on the Pribilof Islands in the Bering Sea. The Bureau expects that there will be harvested each year some 90,000 surplus animals from which the fur known as Alaska fur seal is prepared. Under the terms of a treaty with Canada, Japan, and the U.S.S.R., 70 percent of the harvest is retained by the United States and 15 percent is delivered to each of the governments of Japan and Canada.

The Department of the Interior announced on November 30, 1961, that it had canceled its contract with Fouke Fur Company of St. Louis, Mo., for processing and selling Alaska seal skins. The "Invitation for Proposals" and "Prospectus" are being issued to acquaint all persons and firms interested in providing services for processing and/or selling U.S. Government Alaska seal skins with requirements and conditions under which such operations will be conducted. The deadline for submitting proposals is September 30, 1962.

Copies of the "Invitation for Proposals" and "Prospectus" may be obtained from the Director, Bureau of Commercial Fisheries, U.S. Department of the Interior, Washington, 25, D.C.

Note: See Commercial Fisheries Review, January 1962 p. 65.



Interstate Commerce Commission

CERTAIN FROZEN PREPARED FISHERY PRODUCTS INCLUDED IN FISHERY EXEMPTION FOR TRUCKS:

The status of certain frozen prepared fishery products (such as fish dinners, fish cakes, etc.) under the fishery exemption for trucks was decided on May 24, 1962, by Division I of the U. S. Interstate Commerce Commission, in W. W. Hughes "Grandfather" Application MC-105782 (Sub. No. 4). The language of the Transportation Act of 1958 left some doubt as to the status of prepared products such as fish dinners and fish cakes.

Fresh and frozen fishery products, cooked or uncooked, not hermetically sealed nor otherwise preserved are exempt from economic regulation, but when those products are moved in the same vehicle with regulated products, fishery products become regulated. Under the exemption, fishery products may be transported by a carrier without regard to rates published or the route specified by his certification of operation. In fact, the carrier need not have any operating rights granted by the I.C.C. The flexibility of service afforded by the exemption is important to the fishery industry for successful marketing of its products.

The examiner in his recommended report in the case cited concluded that fish specialties such as dinners and fish cakes were not exempt because of a mixture of regulated commodities such as frozen vegetables or ingredients that are not incidental to seasoning or binding. The Commission reversed the examiner's recommendation and commented that if "it was the intention of Congress that deviled crabs, deviled clams, deviled lobsters, codfish cakes, salmon croquettes, and similar fish or shellfish foods be exempted from economic regulation then that intention must prevail." Therefore, it might be said that a "basic ingredient principle" is established that if the basic ingredient is fish or shellfish, then the product is considered exempt. The test for fish mixed

with other products such as fish dinners is: if the fish dinners share a common initial wrapper or container, and retain the characteristics of a fish or seafood dinner in the ordinary and usual sense, the exemption applies."

The following is the discussion of the exemption in the decision:

THE FISH AND SHELLFISH EXEMPTION

A question has arisen with respect to the Bureau of Motor Carriers' administrative ruling No. 110, issued on September 26, 1958, shortly after passage of the Transportation Act of 1958. Administrative rulings are informal opinions intended to assist the Commission's field staff and the public in interpreting the various provisions of the Interstate Commerce Act and the rules and regulations promulgated thereunder, in the absence of definitive decisions. They are not binding on either the Commission or other persons. Monroe Common Carrier Application, 8 M.C.C. 183, Clark-Lease-Ronker, 36 M.C.C. 195. Ruling No. 110 interprets ruling No. 107 in the light of the amendments made to section 203 (b) (6) by section 7. When the amendments were made, ruling No. 107 was specifically incorporated, or codified, into the amended statute for the purpose of establishing the status of the commodities listed therein as exempt or nonexempt, with certain exceptions. The second proviso of the amended section establishes the status of a number of commodities not withstanding that ruling No. 107 might be to the contrary. Of particular importance here, the proviso states that the exemption afforded by the statute "shall be deemed to include cooked or uncooked (including breaded) fish or shell fish when frozen or fresh (but not including fish and shell fish which have been treated for preserving, such as canned, smoked, pickled, spiced, corned or kippered products)." To the extent that the list in ruling No. 107 differs from this language it must yield. Recognizing this, the Bureau re-examined this list and issued ruling No. 110 expressing an informal opinion that the following commodities must now be considered exempt from economic regulation: (1) dinners, seafood, frozen; (2) fish (including shell fish), breaded, cooked or uncooked, frozen or fresh; (3) cakes, codfish, cooked or uncooked, frozen or fresh; (4) clam juice or broth, cooked or uncooked, frozen or fresh; (5) croquettes, salmon, cooked or uncooked, frozen or fresh; (6) deviled crabs, clams, or lobsters, cooked or uncooked, frozen or fresh; (7) fish dinners, cooked or uncooked, frozen or fresh; (8) fried fish filets, oysters, or scallops, frozen or fresh; and (9) fish sticks, cooked or uncooked, frozen or fresh. The opinion of the Bureau with respect to the status of fish sticks as an exempt commodity was confirmed in Phillips Common Carrier Application, 82 M.C.C. 528. It is true that many of the commodities listed in the ruling contain ingredients other than fish or shellfish, but if it was the intention of Congress that deviled crabs, deviled clams, deviled lobsters, codfish cakes, salmon croquettes, and similar fish or shellfish foods be exempted from economic regulation then that intention must prevail. The general effect of the last proviso is to broaden the exemption to embrace cooked as well as fresh fish and shellfish. The language used in the statute is broad, and cannot be said to be entirely clear, since it embraces a multitude of specific commodities. The language presently employed does not differ materially in form from that formerly employed. That the former language was not clear and unambiguous is amply reflected in the court and Commission decisions which construed the language. Interstate Commerce Com-

mission v. Love, supra, and the four decisions in *Monark Eggs Corp.*, Contract Carrier Application, 26 M.C.C. 615, 44 M.C.C. 15, 49 M.C.C. 693, and 52 M.C.C. 576. It will be helpful, therefore, to refer to the legislative history of the statute to ascertain the intent of Congress.^{1/} We are of the opinion that the legislative intent as it appears in the footnoted colloquy is in harmony with opinions shown in ruling No. 110. Seafood or fish dinners involve the packaging of ordinarily non-exempt commodities such as frozen french fried potatoes, french fried onions, cooked broccoli, and others in the same container with the chief course consisting of fish or shellfish. The main ingredient of a fish or seafood dinner is the fish course; the accompanying food items are complementary and secondary. Uppermost in the mind of the consumer is the fish or shellfish component. He regards the dinner, without respect to the accompanying vegetables, as a fish or seafood dinner, with emphasis on the particular fish course involved. The dinners are customarily packed in individual containers, and are entities within themselves, which is not true when the various food items making up the dinner are packed separately. As long as the fish dinners share a common initial wrapper or container, and retain the characteristics of a fish or seafood dinner in the ordinary and usual sense, the exemption applies, and the transportation of such dinners is exempt from economic regulation. The same item moving in separate packages in the same vehicle would come within the principle of *Panther*, supra, and the exemption would no longer apply. We conclude that the fish and shellfish commodities listed as exempt from economic regulation in ruling No. 110 are correctly so designated.

^{1/} See Colloquy, Senators Kennedy and Smathers, before Senate, reported in the *Congressional Record* for June 11, 1958 (p. 9744). "Codfish cakes, deviled crab, fish with sauce, fish dinners, and similar sea food products" are mentioned as falling within the exemption.



Department of Labor

WAGE AND HOUR AND PUBLIC CONTRACTS DIVISION

SPECIAL WAGE MINIMUMS FOR LEARNERS IN FISHERY PLANTS MAY BE POSSIBLE:

Labor Department Wage and Hour officials have indicated that they might grant requests for Learner Certificates in fishery or seafood plants. Such certificates would permit the employment of trainees at rates below the statutory minimum.

One of the requirements for learner certificates is that the occupation involved must "involve a sufficient degree of skill to necessitate an appreciable learning period." Adequate information from individual plants or groups would be necessary as to actual training periods and relative production of new and of experienced workers over a considerable period of time before a decision could be made as to whether the legal requirements are met. Another basic requirement

for learner certificates is that such certificates are in fact necessary to prevent curtailment of employment opportunities.



Department of State

AGENCY FOR INTERNATIONAL DEVELOPMENT

"COOLEY LOANS" NOW AVAILABLE IN EIGHTEEN AFRICAN COUNTRIES:

Morocco and Sudan have been added to the list of African countries in which "Cooley funds" are available for lending to qualified United States firms, according to an announcement on July 12, 1962, by the Assistant Administrator for Development Finance and Private Enterprise in the Agency for International Development.

He said foreign currencies equivalent to \$197.8 million are now available in 18 countries. They may be lent to United States businesses or their affiliates for development or expansion of foreign operations.

Named after Congressman Harold D. Cooley of North Carolina, who sponsored the pertinent amendment to Public Law 480 (Food for Peace), the loans are in local currencies received from sale of surplus United States agricultural products. Repayments also are in local currencies.

Loan applications may be made to the Private Enterprise Division, Agency for International Development, Washington 25, D. C., or to the U.S. AID Mission in countries involved, care of the U.S. Embassy.

AREA REDEVELOPMENT ADMINISTRATION

SHELLFISH INDUSTRY STUDY IN YORK COUNTY, MAINE, APPROVED:

The Area Redevelopment Administration (ARA) announced approval of a \$44,000 contract with the State of Maine's Department of Sea and Shore Fisheries, for a study of the declining commercial shellfish industry in the waters off York County.

The project will cover several studies. A survey will be made of the number, growth rate, and mortality rate of commercial species of shellfish, including clams, oysters, quahogs and mussels. A pilot plant experimental operation will study methods

of pollution abatement and try to determine methods acceptable to the U. S. Public Health Service of purifying and salvaging some of the shellfish currently being rejected because of pollution in York County waters.

The shellfish industry of the area has declined about 46 percent in the last 15 years. Annual loss of income has been more than \$1.25 million and industry employment in the area has dropped about 80 percent.

In addition to the ARA investment of \$44,000, the State of Maine will contribute \$29,646 to complete the project studies. The results of the pilot plant experimental operations will be made available to other commercial fishing areas experiencing serious pollution problems.

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United States Supreme Court

RULING AFFECTS FISHING CREWS UNEMPLOYMENT AND SOCIAL SECURITY TAX EXEMPTION:

On May 28, 1962, the United States Supreme Court commented on the factors involved in deciding whether fishermen are independent contractors or employees for Federal tax purposes. The point arose in the case of J. L. Enochs, District Director of Internal Revenue, vs. Williams Packing & Navigation Co., Inc., which was decided on procedural grounds.

Williams Packing Co. supplies trawlers to fishermen who take shrimp, oysters, and fish off the Gulf coast. In July 1959, Federal District Judge Sidney Mize permanently enjoined the collection of social security and unemployment taxes for the vessel captains and crewmen working the Williams Packing Co. trawlers during 1953-1955. The United States Court of Appeals for the Fifth Circuit affirmed the District Court decision on the ground that the taxes were not payable since the fishermen were independent contractors.

On appeal by the Government, the Supreme Court reversed the judgment of the Court of Appeals and remanded the case to the District Court with directions to dismiss the complaint. The Supreme Court ruled that the collection of Federal taxes may be enjoined only when it is clearly apparent at the time of suit that, under the most liberal view of the law and the facts, the United States cannot establish tax liability. The right to disputed tax sums in cases which do not meet this requirement must be determined in a suit for a refund. The Supreme Court held that it was not clearly evident that the fishermen on the vessels of the Williams Packing Company were independent contractors.

Note: See Commercial Fisheries Review, May 1962 p. 78, Sept. 1961 p. 114.



White House

FISHERY EXPORTS TO EL SALVADOR CONFRONTED WITH HIGHER DUTIES:

On July 2, 1962, the President proclaimed that tariff concessions under the May 1, 1937, bilateral trade agreement between El Salvador and the United States would end August

8, 1962. El Salvador had requested and obtained mutual termination of concessions affecting 27 commodities, including two fishery products. This step was necessary to El Salvador's participation in the Central American economic integration movement with Guatemala, Honduras, and Nicaragua.

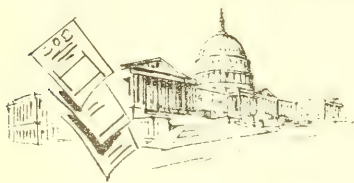
The El Salvador import duty rate on two fishery commodities, canned mackerel and canned salmon, will be increased from \$5.00 per 100 gross kilograms and 6 percent ad valorem to \$35.00 per 100 kilograms and 8 percent ad valorem. In recent years, El Salvador has consistently been an important foreign market for United States canned mackerel. In 1961, canned mackerel exports to El Salvador were valued at \$151,000, canned salmon, \$23,000.

It is expected that United States exports of canned mackerel and canned salmon to El Salvador may be adversely affected by the increase in the duty rates. Duties on canned sardines may also increase as the result of termination of concessions with other countries. United States trade in that product during 1961 was valued at \$8,000.



Eighty-Seventh Congress (Second Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Intro-



duction, referral to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.

AMERICAN SAMOA INCLUDED IN CERTAIN LAWS: The House on July 19, 1962, disagreed with the Senate amendment on H.R. 10062, to extend the application of certain laws to American Samoa, and asked for a conference with the Senate. Five conferees were appointed by the House.

The Senate on July 20, 1962, received a message from the House announcing its disagreement to the amendment of the Senate to H.R. 10062. Agreeing to a conference, the Senate appointed five conferees. Would make available to American Samoa the technical assistance, as needed, of the various Federal departments and agencies and to extend to American Samoa several Federal assistance programs presently available in other parts of the United States and its territories.

EXEMPT TRANSPORTATION OF AGRICULTURAL AND FISHERY PRODUCTS (H.R. 11583) AND TRANSPORTATION ACT OF 1962 (H.R. 11584): The House Committee on Interstate and Foreign Commerce held a hearing on July 10, 1962, on H.R. 11583, to exempt certain carriers from minimum rate regulation in the transportation of bulk commodities, agricultural and fishery products, and passengers, and for other purposes; and H.R. 11584, to provide for strengthening and improving the national transportation system, and for other purposes. At the hearing, Commissioner Murphy reiterated the ICC's long standing position on the agricultural and fishery exemption. He asked that Congress take no action in extending the agricultural and fishery exemption to the railroads. Further, he requested a tightening of the exemption so as to limit it to farmers and fishermen transporting their products to local markets.

The purpose of the bills is to place water, rail, and motor carriers on an equal basis competitively. The bills propose that the motor carrier exemption for fresh and frozen fish be extended to the rail carriers, and also allow the rail and motor carriers the present water carrier bulk exemption. This would mean that fish meal in bulk could be carried by rail under rates exempt from prescribed minimums set by the ICC.

FISH HATCHERY (KENTUCKY): H.R. 12277 (Chelf), H.R. 12280 (Natcher), H.R. 12281 (Perkins), H.R. 12283 (Stubbefield), H.R. 12284 (Watts), and H.R. 12288 (Siler) introduced in the House on June 25, 1962, and H.R. 12626 (Spence) July 19, 1962, to provide for the establishment of a new trout fish hatchery on or near the Cumberland River in the eastern part of the State of Kentucky; all referred to the Committee on Merchant Marine and Fisheries. A companion bill S. 3471 (Cooper) was introduced in the Senate on June 25, 1962; referred to the Committee on Commerce.

GLOUCESTER HARBOR (MASS.) IMPROVEMENT: The Senate on July 13, 1962, introduced S. 3544 (Smith of Mass.), authorizing modification of the existing project for Gloucester Harbor, Mass.; referred to the Committee on Public Works.

The Senate Committee on Public Works, in executive session, on July 20, 1962, ordered favorably reported S. 3544. The Senate on July 23, 1962, received the report (S. Rept. No. 1777) from the Committee.

NATIONAL FISHERIES CENTER AND AQUARIUM: On July 6, 1962, the Senate Subcommittee on Public Buildings and Grounds ordered favorably reported to the full committee H.R. 8181, authorizing the Secretary of the Interior to construct a National Fisheries Center and Aquarium in the District of Columbia.

The Senate Committee on Public Works, in executive session, July 20, 1962, ordered favorably reported H.R. 8181 amended. The Senate on July 23, 1962, received the report (S. Rept. No. 1778) from the Committee.

National Fisheries Center and Aquarium (Hearing before a Subcommittee of the Committee on Public Works, United States Senate, 87th Congress, 2nd Ses-

sion), 59 pp., printed. Contains hearing held on June 15, 1962, on S. 2296 and H.R. 8181, bills to authorize construction of a National Fisheries Center and Aquarium in the District of Columbia. Contains statements and letters of Federal agencies, Congressmen, and interested people.

NAVAL OCEANOGRAPHIC OFFICE: The Senate Committee on Armed Services, June 28, 1962, in executive session, ordered favorably reported H.R. 8045, to change the name of the Hydrographic Office to United States Naval Oceanographic Office. The Senate, on the same date, received the report (S. Rept. No. 1667) from the Committee.

The Senate on June 29, 1962, passed H.R. 8045. Since the House had passed the bill August 15, 1961, the bill was sent to the President for signature.

The President on July 10, 1962, signed H.R. 8045 (P.L. 87-533).

Senate Report No. 1667, Changing the Name of the Hydrographic Office to the U. S. Naval Oceanographic Office. (June 28, 1962, a report from the Senate Committee on Armed Services, U. S. Senate, 87th Congress, 2nd Session, to accompany H.R. 8045), 4 pp., printed. The Committee reported favorably on the bill without amendment and recommended that the bill pass. Contains the purpose of the bill, background, fiscal data, departmental data, and changes in existing laws.

NETTING IMPORTS FOR RESEARCH: H.R. 12180 (Mills) introduced in the House on June 18, 1962, to extend for a temporary period the existing provisions of laws relating to the free importation of personal and household effects brought into the United States under Government orders; referred to the Committee on Ways and Means. The House on June 26, 1962, received the report (H. Rept. No. 1920) on H.R. 12180 from the Committee on Ways and Means. On June 29, 1962, the House passed the bill.

The Senate Committee on Finance on July 10, 1962, ordered favorably reported H.R. 12180 amended (so as to add the text of S. 1814, providing for the free importation of monofilament gill nets for use in fish sampling...). The Senate on July 11, 1962, received the report (S. Rept. No. 1720) from the Committee.

Senate Report No. 1720, Household Effects--Monofilament Gill Fish Nets--Accident and Health Insurance Contract Premiums (a report from the Committee on Finance, United States Senate, 87th Congress, 2nd Session, to accompany H.R. 12180). The Committee reported the bill favorably with amendments and recommended passage. The amendment would provide for the importation of monofilament gill nets for use in fish sampling. Also contained in the report is the purpose of the bill, general statement, explanation of the amendments, and changes in existing law.

OCEANOGRAPHIC PROGRAM: H.R. 12601 (Dingell) was introduced in the House on July 18, 1962, to provide for a comprehensive, long-range, and coordinated national program in oceanography, and for other purposes; referred to the Committee on Merchant Marine and Fisheries. The purpose of the bill is to develop and maintain a coordinated, comprehensive, and long-range national program in oceanography. In furtherance of this policy, the humanitarian and economic welfare of the United States and the national security require that adequate provision be made for continuing, systematic research, studies, and surveys of the ocean and its resources, and of the total marine environment.

The program is to be implemented by both "in house" and contract research, through the balanced participation and cooperation of all qualified persons, organizations, institutions, agencies, or corporate entities, whether governmental, educational, nonprofit, or industrial. The Office of Science and Technology established by Reorganization Plan No. 2 of 1962 shall establish a national program of oceanography and shall issue a statement of national goals with respect to oceanography, which shall set forth methods for achieving those goals and the responsibility of the departments, agencies, and instrumentalities of the United States to carry out the national program on an integrated, coordinated basis. All interested departments, agencies, and instrumentalities of the United States, as well as capable nongovernmental institutions and industries where appropriate are to be consulted. It would establish in the Office the position of Assistant Director for Oceanography, to be appointed by the President, and by and with the advice and consent of the Senate. The Director of the Office is to appoint an Advisory Committee for Oceanography to consist of seven members, to review the national program of oceanography and revisions thereof and make recommendations.

OYSTER BROOD STOCK PURCHASES: The Merchant Marine and Fisheries Subcommittee of the Senate Committee on Commerce held hearings on H.R. 7336, to promote the production of oysters by propagation of disease-resistant strains and for other purposes. Testimony was heard from the Assistant Director, Bureau of Commercial Fisheries, and the legislative assistant to Senator Boggs. The hearings were adjourned subject to call on June 25, 1962.

On July 11, 1962, the Senate Committee on Commerce, ordered favorably reported as amended, H.R. 7336. House had passed the bill on April 3, 1962.

The Senate, on July 16, 1962, received the report, with amendment (S. Rept. No. 1736), from the Committee on Commerce on H.R. 7336.

Senate Report No. 1736, Rehabilitation of Oyster Beds (July 16, 1962, a report from the Senate Committee on Commerce, U. S. Senate, 87th Congress, 2nd Session to accompany H.R. 7336), 5 pp., printed. The Committee reported bill favorably with amendments and recommended passage. It contains the purpose of the bill (which is to restore the oyster industry in the Delaware and Chesapeake Bays, and to develop oyster stock that has resistance to the virus organism known as MSX that is spreading through the oyster beds); general information; amendments; and departmental reports. The bill as amended and passed by the House only contains authority to acquire and distribute brood stock, the States to pay one-third of the cost. The loan provisions were deleted at the request of the Department of the Interior, on the ground that such provisions were inadvisable at this time because there are very few disease-resistant strains now available commercially; the Senate amendments would reduce the amount authorized by the bill from \$3 million to \$100,000, with funds provided by the Federal Government to be matched by each state by 50 percent of the amount granted.

On July 18, 1962, the Senate passed with amendment and sent back to the House, H.R. 7336. The bill as amended by the Senate Committee on Commerce and as passed by the Senate provides that the Interior Secretary can make grants to the States referred to in the bill for assisting the states to finance research and other activities needed in the development and propagation

of disease-resistant strains of oysters. States are to match the grant in funds to at least 50 percent of the amount of the grant. Federal Government total appropriation for such grant is limited to \$100,000.

OYSTER PLANTERS DISASTER LOANS: On July 9, 1962, the Senate Subcommittee on Agricultural Credit and Rural Electrification held hearings on H.R. 946. Testimony was received from various Federal agencies and industry.

Miscellaneous (Hearings Before the Committee on Agriculture, House of Representatives, 87th Congress, 2nd Session), 210 pp., printed. Contains, among others, the hearing held March 19, 1962, on H.R. 946 (pp. 171-185), to extend to oyster planters the benefits of the provisions of the present law which provide for production disaster loans for farmers and stockmen. Contains statements by Government officials.

PACIFIC MARINE FISHERIES COMMISSION: The House and the Senate on July 16, 1962, received a letter from the Chairman, Pacific Marine Fisheries Commission, Portland, Oreg., transmitting the 14th Annual Report of the Pacific Marine Fisheries Commission for the year 1961. The Report was referred to the Senate Committee on Commerce and the House Committee on Merchant Marine and Fisheries.

PACIFIC MARINE FISHERIES COMPACT: On July 11, 1962, the Senate Committee on Commerce, ordered favorably reported S. 3431, to consent to the amendment of the Pacific Marine Fisheries Compact and to the participation of certain additional States in such compact in accordance with the terms of such amendment. The change consists of an addition to the existing compact which provides in part: "The State of Alaska or Hawaii, or any State having rivers or streams tributary to the Pacific Ocean may become a contracting State by enactment of the Pacific Marine Fisheries Compact."

The Senate, July 16, 1962, received a favorable report (S. Rept. No. 1735) from the Committee on Commerce on S. 3431.

On July 18, 1962, the Senate passed without amendment and cleared for the House S. 3431. The House received the bill on July 19, 1962, and referred it to the Committee on Merchant Marine and Fisheries.

POTOMAC RIVER COMPACT (VA. & MD.) OF 1958: The House Committee on the Judiciary reported favorably to the House on July 17, 1962, H.J. Res. 659, granting consent of the Congress to a compact entered into between the State of Maryland and the Commonwealth of Virginia for the creation of the Potomac River Compact of 1958; without amendment (H. Rept. No. 1980); referred to the Committee of the Whole House on the State of the Union.

SCIENCE AND TECHNOLOGY COMMISSION: The Senate Committee on Government Operations July 24, 1962, concluded hearings on S. 2771, providing for the establishment of a Commission on Science and Technology. Testimony was given by various Federal agencies and interested people. The hearings were adjourned subject to call.

SCIENCE AND TECHNOLOGY OFFICE: The House on June 28, 1962, received a communication from the President (H. Doc. 462) transmitting a proposed supplemental appropriation for the fiscal year 1963 in the amount of \$850,000 for the Office of Science and Technology; referred to the Committee on Appropriations.

SHELLFISH PROCESSING EXEMPTION FROM MINIMUM WAGE: H.R. 12541 (Henderson) introduced in the House on July 16, 1962, to amend the Fair Labor Standards Act of 1938 to exempt therefrom persons engaged in certain processing of shrimps, crabs, or oysters; referred to the Committee on Education and Labor. Similar to other bills previously introduced.

STATE DEPARTMENT APPROPRIATIONS FY 1963: Departments of State, Justice, and Commerce, the Judiciary, and Related Agencies Appropriations for 1963 (Hearings Before a Subcommittee of the Committee on Appropriations, House of Representatives, 87th Congress, 2nd Session), 1,318 pp., printed. State Department appropriations include funds for the international fisheries commissions in the amount of \$2,165,000, an increase of \$255,000 over the 1962 appropriation of \$1,910,000. Included are increases for nearly all commissions with the largest increases for the International Pacific Halibut Commission (\$162,050) and International Pacific Salmon Fisheries Commission (\$83,050). There was a decrease of \$487 for the Great Lakes Fishery Commission. Other commissions included in the appropriations are: Inter-American Tropical Tuna Commission; International Commission for the Northwest Atlantic Fisheries; International Whaling Commission; International North Pacific Fisheries Commission; and North Pacific Fur Seal Commission. That part dealing with the Commissions, includes the statutory authorization, general statement, background statement, accomplishments by Commissions in fiscal year 1961, programs for fiscal years 1962 and 1963, explanation of the increases and basis for estimates for each Commission.

H.R. 12580 (Rooney) introduced in the House on July 17, 1962, making appropriations for the Department of State, Justice, and Commerce, the Judiciary, and related agencies for the fiscal year ending June 30, 1963. In the State Department appropriations are included funds for international fisheries commissions.

The House Committee on Appropriations July 17, 1962, reported (H. Rept. No. 1996) favorably to the House on H.R. 12580. Bill was referred to the Committee of the Whole House on the State of the Union.

House Report No. 1966, Departments of State, Justice, and Commerce, the Judiciary, and Related Agencies Appropriation Bill, Fiscal Year 1963 (July 17, 1962, a report from the Committee on Appropriations, House of Representatives, 87th Congress, 2nd Session, to accompany H.R. 12580), 43 pp., printed. The Committee reduced the budget request of \$2,165,000 for international fisheries commissions to \$1,910,000, the same as for fiscal year 1962.

The House on July 20, 1962, passed H.R. 12580 with amendment.

TARIFF CLASSIFICATION STUDY: The Senate on July 2, 1962, received a letter from the Chairman, United States Tariff Commission, transmitting, pursuant to law, a second supplemental report on tariff classification study, dated June 1962 (with an accompanying report); referred to the Committee on Finance. The House on the same day received a similar letter; referred to the Committee on Ways and Means.

TRADE EXPANSION ACT OF 1962: H.R. 12300 (Dent) and H.R. 12302 (Lennon) introduced in the House on June 26, 1962, to promote the general welfare, foreign policy, and security of the United States through international trade agreements and through adjustment assistance to domestic industry, agriculture, and labor,

and for other purposes; both referred to the Committee on Ways and Means. Similar to other bills previously introduced.

The Committee on Rules on June 26, 1962, introduced H. Res. 712 for consideration of H.R. 11970. The Committee on the same day reported (H. Rept. No. 1924) on H. Res. 712, for consideration of H.R. 11970, a bill to promote the general welfare, foreign policy, and security of the United States through international trade agreements and through adjustment assistance to domestic industry, agriculture and labor, and for other purposes; without amendment. The resolution provides that all points of order against H.R. 11970 are waived; after general debate, confined to the bill and not to exceed 8 hours, the bill shall be considered as having been read for amendment; amendments can be offered only by direction of Committee on Ways and Means and are not subject to amendment; and only one motion to recommit will be allowed.

The House on June 27, 1962, by voice vote, adopted H. Res. 712, for consideration of H.R. 11970. House resolved itself into the Committee of the Whole House on the State of the Union to consider H.R. 11970.

The House on June 28, 1962, passed H.R. 11970, the Trade Expansion Act of 1962, with committee amendments.

As the House-approved bill goes to the Senate, it authorizes the President to cut tariffs in groups by 50 percent over a 5-year period; to reduce to zero tariffs on items in which the Common Market and United States trade represent 80 percent of world trade, also over a 5-year period; and to eliminate all duties on items presently bearing a duty of 5 percent or less, also over a 5-year period. The bill contains a provision that would allow the President to eliminate all duties over a 5-year period on items presently dutiable at the rate of 5 percent or less. Most fishery duties are on a cents-per-pound basis, but when converted to a percentage ad valorem basis, a number of items presently bear an equivalent duty of 5 percent or less. On these items, the President in reciprocal negotiations could do away with all duties over a 5-year period.

H.R. 11970, House-passed bill, was read twice in the Senate by its title and referred to the Committee on Finance.

TUNA CONVENTION ACT OF 1950 AMENDMENT: On July 11, 1962, the Senate Committee on Commerce, ordered favorably reported S. 2568, to amend the act of September 7, 1950, to extend the regulatory authority of the Federal and State agencies concerned under the terms of the Convention for the establishment of an Inter-American Tropical Tuna Commission, signed at Washington, May 31, 1949, and for other purposes. The Senate Committee on Commerce reported (S. Rept. No. 1737) to the Senate on July 16, 1962, on S. 2568 with amendments.

Senate Report No. 1737 Conservation of Tropical Tuna (July 16, 1962, a report from the Senate Committee on Commerce, U. S. Senate, 87th Congress, 2nd Session, to accompany S. 2568), 18 pp., printed. The Committee favorably reported the bill with amendment and recommended passage. The Committee amendment inserts a clean bill which is based upon an agreement reached at a series of conferences between the affected agencies of the Government and the major elements of the American tuna industry. It contains the purpose of the legislation, a general discussion, cost, a sec-

tion-by-section analysis, agency comments, and changes in existing law. The purpose of the bill is to provide for the issuance and enforcement of Federal regulations in order to carry out recommendations of the Inter-American Tropical Tuna Commission for the conservation of tuna resources in the eastern Pacific when the recommendations are concurred in by the United States. In order to achieve this purpose, the bill would authorize the Secretary of the Interior to issue appropriate regulations after following certain procedural steps. Under the bill, the regulations would not be applied to vessels and persons under the jurisdiction of the United States until an agreed date for the application of comparable measures by all other countries whose vessels fish for tuna in the regulatory area on a meaningful scale, and the regulations could be suspended if foreign fishing operations in the area were to threaten the conservation objectives of the Commission. In addition, the bill would require the simultaneous imposition of regulations prohibiting the entry into the United States of tuna subject to regulation which were caught under conditions that would defeat the effectiveness of the conservation recommendations of the Tropical Tuna Commission. Would make it unlawful to fish in violation of the regulations or to deal in fish which were caught in violation of such regulations, and it would provide penalties for such acts.

On July 18, 1962, the Senate passed with amendment and cleared for the House S. 2568. Received by the House on July 19, 1962, and referred to the Committee on Foreign Affairs.

VESSEL COLLISION LIABILITY: Senate Report No. 1603, Unifying Apportionment of Liability in Collisions and Other Maritime Casualties (Report from the Senate Committee on Commerce, United States Senate, 87th Congress, 2nd Session, to accompany S. 2313, to unify apportionment of liability in cases of collision between vessels, and related casualties), 20 pp., printed. Committee reported the bill favorably with amendment and recommended passage. Contains purpose of the bill; section-by-section explanation; changes in existing law; and reports from Federal agencies. The Committee amendment inserts a new bill, which is a redraft and a refinement of S. 2313 as introduced. The title as amended reads "a bill to unify apportionment of liability in cases of collision between vessels, and in other maritime casualties." Would make United States admiralty and maritime law uniform with the laws of other major maritime powers. (1) In a collision where both vessels are to blame, liability for the damages would be divided between the vessels according to their respective degree of fault, as determined by the court; (2) would alter the rights of cargo damaged in a collision or other maritime casualty, but does not materially change present law on death or personal injury claims (vessels at fault in collisions or other casualties would remain jointly as well as severally liable to personal injury and death claimants; (3) would establish a two-year statute of limitations governing suits arising of collisions and other maritime casualties, and a one-year statute of limitation to apply to suits for contribution with respect to death or personal injury.

VESSEL OWNERS LIABILITY: Senate Report No. 1602, Limiting the Liability of Shipowners (Report from the Senate Committee on Commerce, United States Senate, 87th Congress, 2nd Session, to accompany S. 2314, to limit the liability of shipowners and for other purposes), 28 pp., printed. Committee reported the bill favorably with amendment and recommended passage. Contains the purpose of the bill; background of the bill; a section-by-section discussion; changes in existing

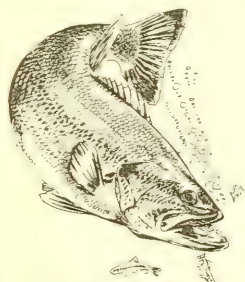
law; and reports from Federal agencies. The Committee amendment inserts a new bill, which is a redraft and a refinement of S. 2314 as introduced. Includes all seagoing and inland waters vessels, including fishing vessels, or their tenders. Would repeal present Limitation of Liability Act and substitute a new act: (1) to afford shipowners the right of limitation of liability, under certain circumstances, to a fixed amount based on the tonnage of the vessel, and (2) to bring the system

of liability limitation in the United States uniform with that of other major maritime nations.

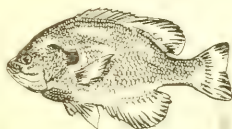
WATER POLLUTION CONTROL ADMINISTRATION: H.R. 12320 (Elliott) introduced in House June 27, 1962, to amend the Federal Water Pollution Control Act by creating a Federal Water Pollution Control Administration and for other purposes; referred to the Committee on Public Works. Similar to other bills previously introduced.



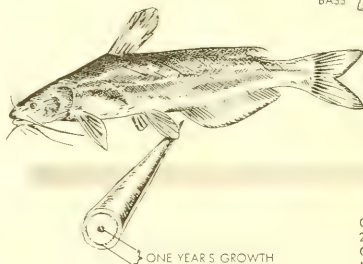
AGE of FISH



GROWTH RATES OF FISH VARY—THE BETTER THE FOOD SUPPLY, THE BETTER THE GROWTH.

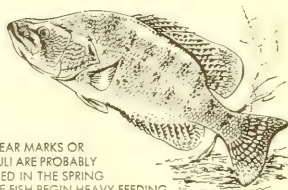


THESE BLUEGILLS ARE THE SAME AGE. THE TOP ONE WAS TAKEN FROM A WELL-MANAGED POPULATION, THE LOWER ONE FROM AN OVER-CROWDED FARM POND.



ONE YEAR'S GROWTH

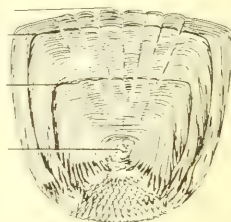
THE YEAR MARKS OR ANNUUS ARE PROBABLY FORMED IN THE SPRING AS THE FISH BEGIN HEAVY FEEDING



"LIFE EXPECTANCY"	
CARP	15 YEARS
BLACK BASS	8 YEARS
SUNFISH	6 YEARS
WHITE BASS	4 YEARS

CATFISH CAN BE AGED BY TAKING SECTIONS OF THE FIN SPINES OR BACK BONE AND MICROSCOPICALLY EXAMINING THEM.

OUTER EDGE
2nd ANNUUS
OR YEAR
MARK
1st ANNUUS
FOCUS OR
CENTER



THIS SCALE WAS TAKEN FROM A BASS IN ITS THIRD YEAR. THE FISH WAS 16 INCHES LONG AND GREW ABOUT 6 INCHES FIRST YEAR AND 6 INCHES DURING THE SECOND YEAR.

(Georgia Game and Fish, Vol. 11, No. 1)



CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

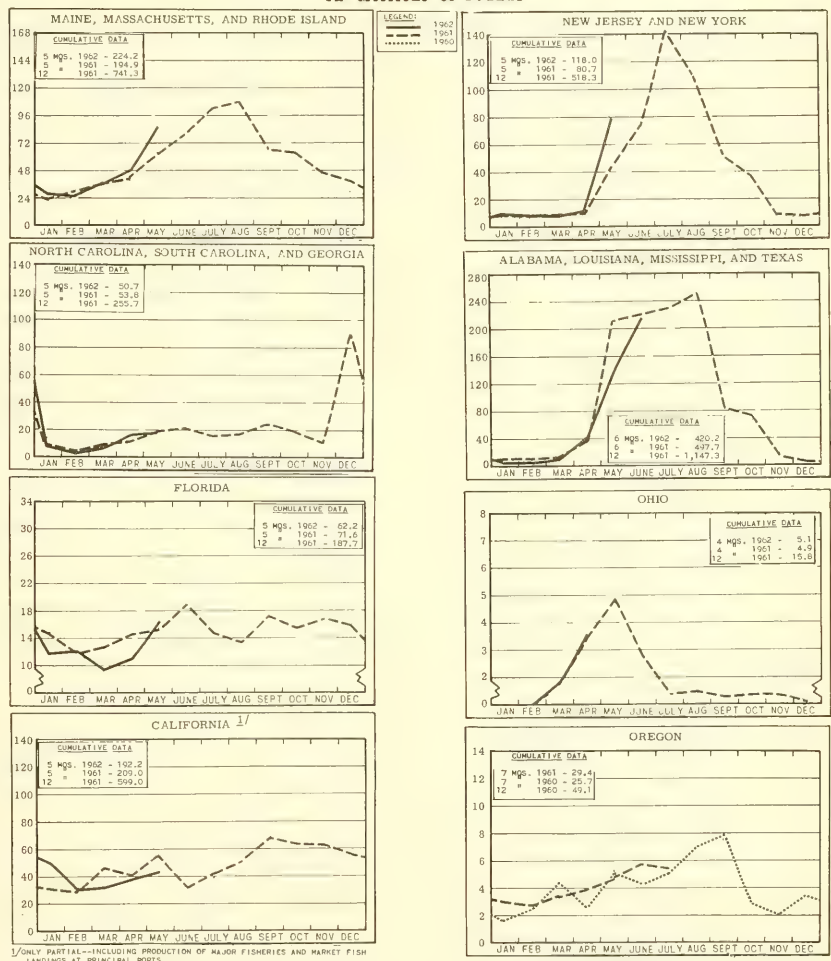
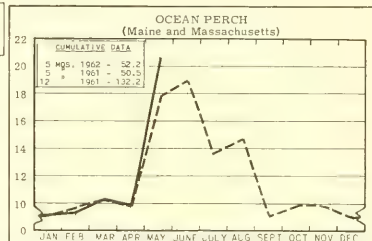
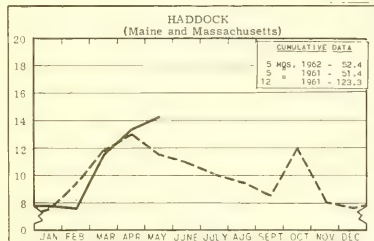
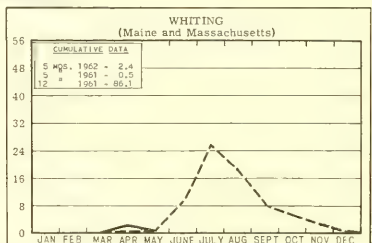
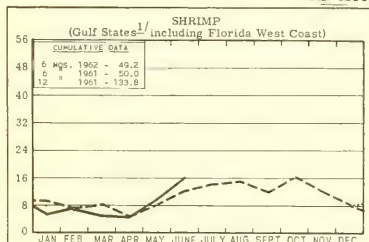


CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

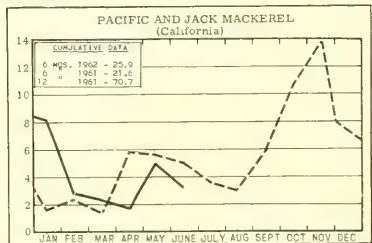
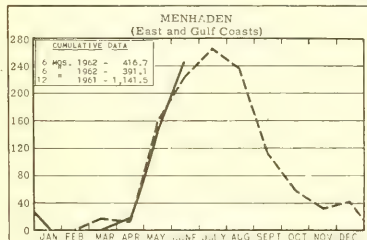


In Millions of Pounds



^{1/}LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons



In Thousands of Tons

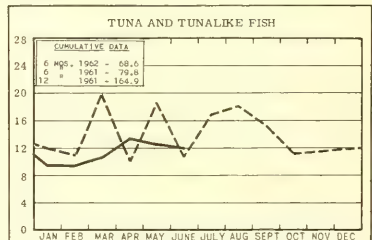
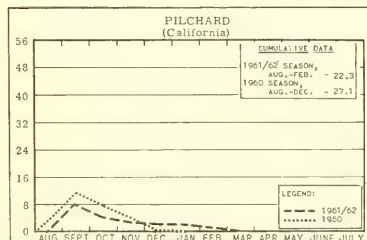
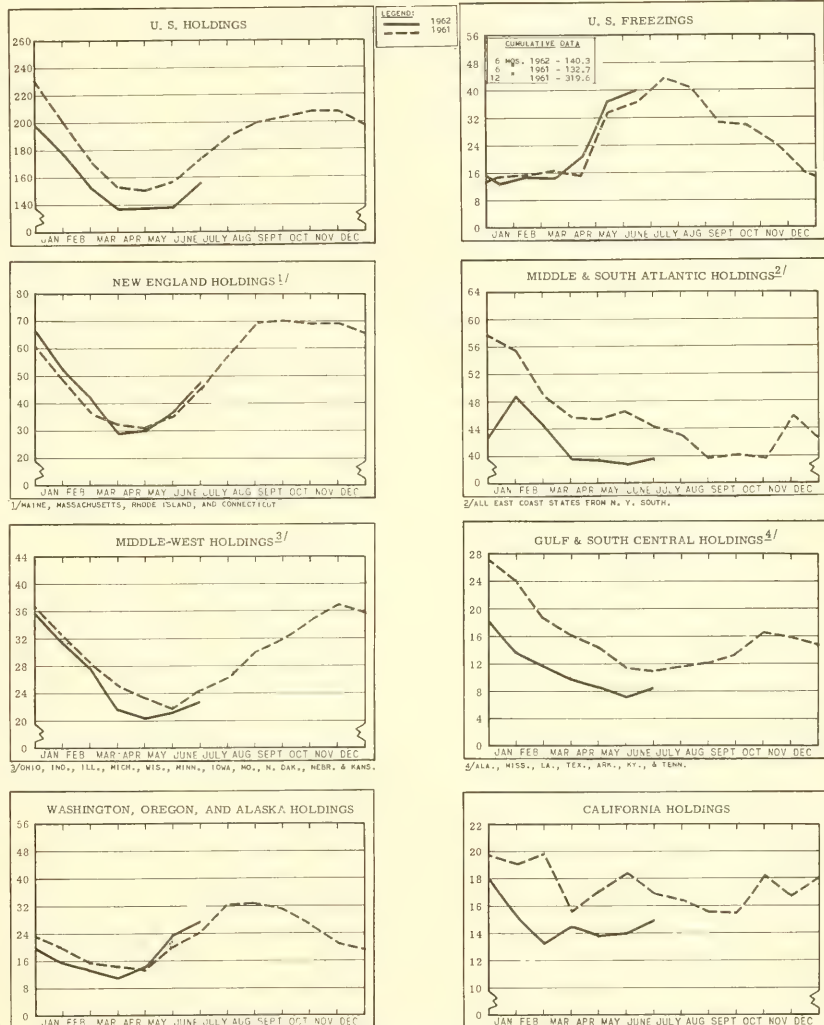


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds



* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

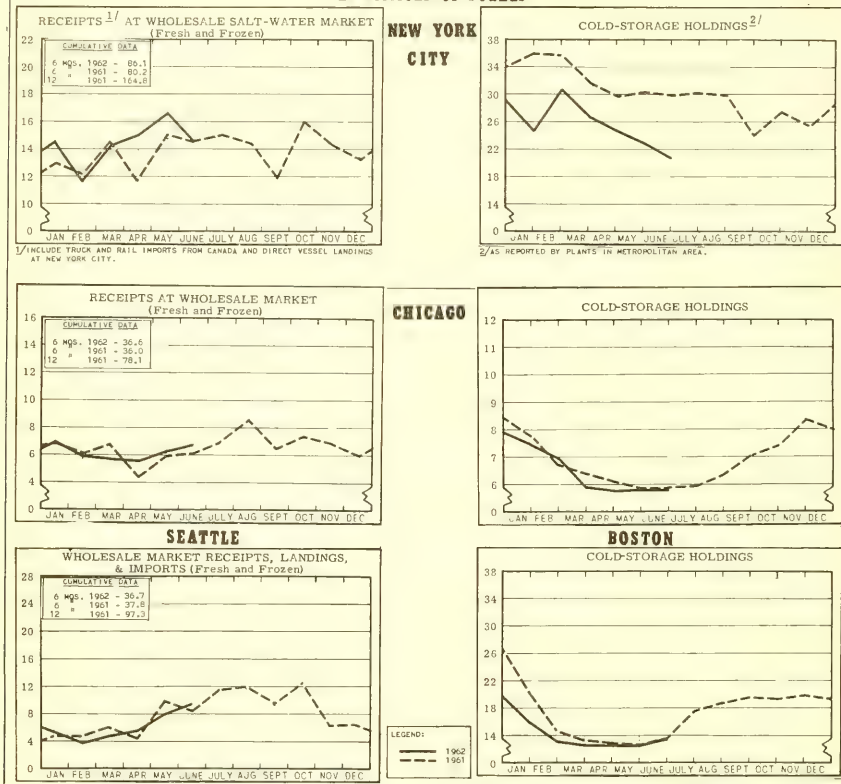


CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA

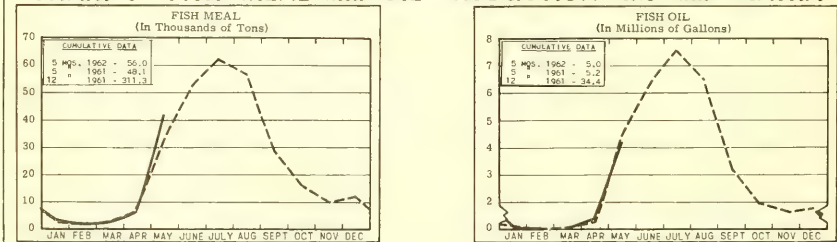
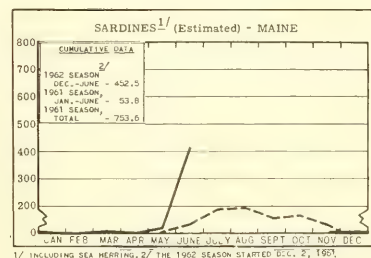
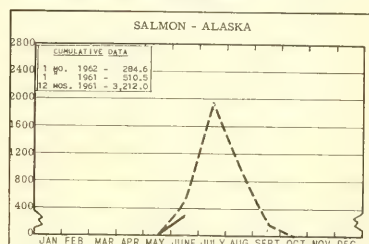
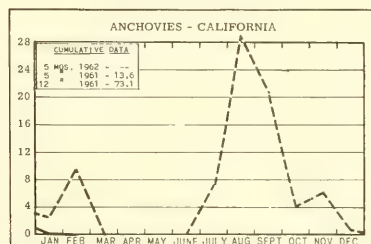
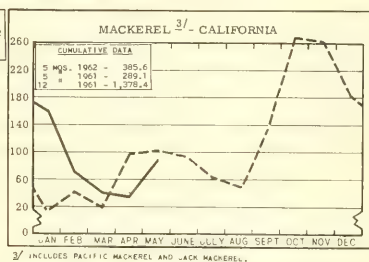
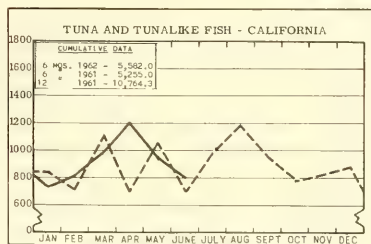


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	$\frac{1}{4}$ drawn	$3\frac{1}{2}$ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# $\frac{1}{2}$ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	$\frac{1}{2}$ -lb.	8 oz.

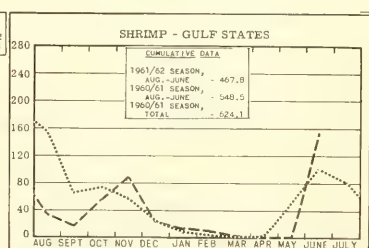
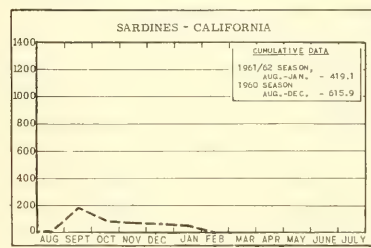
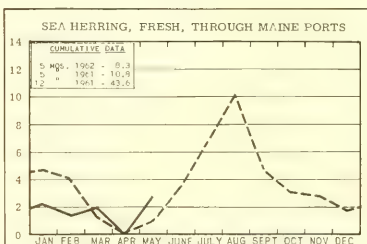
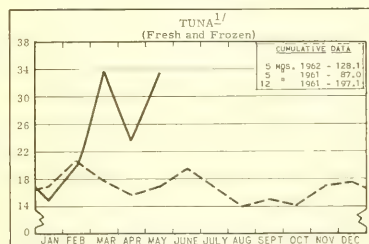
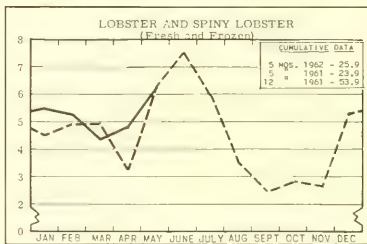
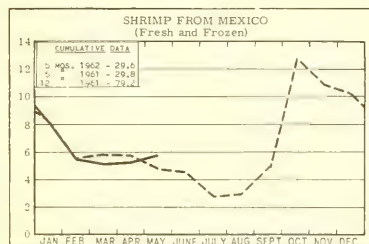
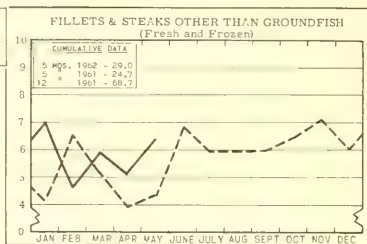
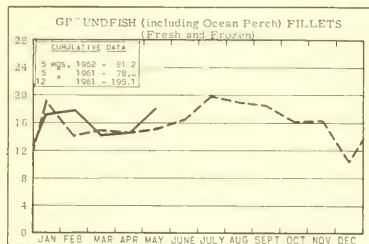
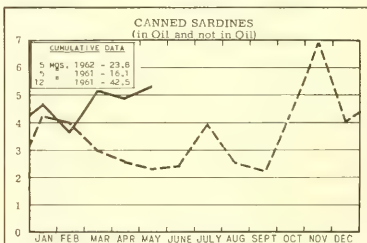
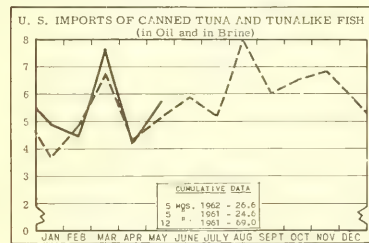


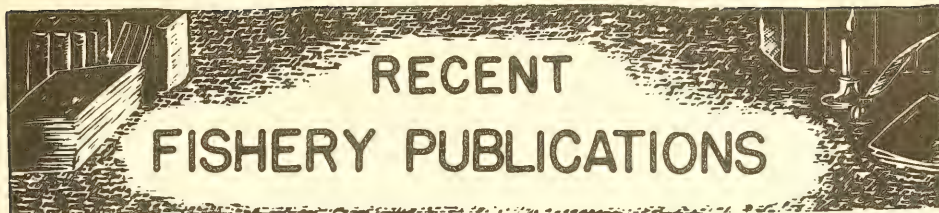
CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds



^{1/2} EXCLUDES LOINS AND DISCS.





FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE OFFICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

- CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
FL - FISHERY LEAFLETS.
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SSR - FISH - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

- | Number | Title |
|----------|---|
| CFS-2890 | - Georgia Landings, March 1962, 2 pp. |
| CFS-2892 | - Imports and Exports of Fishery Products, 1957-1961, Annual Summary, 15 pp. |
| CFS-2893 | - Alabama Landings, Annual Summary, 1961, 7 pp. |
| CFS-2894 | - Texas Landings, February 1962, 3 pp. |
| CFS-2898 | - Alabama Landings, March 1962, 3 pp. |
| CFS-2899 | - Frozen Fish Report, April 1962, 8 pp. |
| CFS-2901 | - Fish Meal and Oil, March 1962, 2 pp. |
| CFS-2902 | - Maine Landings, March 1962, 4 pp. |
| CFS-2903 | - New York Landings, March 1962, 4 pp. |
| CFS-2904 | - Maryland Landings, February 1962, 3 pp. |
| CFS-2905 | - California Landings, February 1962, 4 pp. |
| CFS-2907 | - Virginia Landings, March 1962, 3 pp. |
| CFS-2909 | - Mississippi Landings, March 1962, 3 pp. |
| CFS-2911 | - New Jersey Landings, March 1962, 3 pp. |
| CFS-2913 | - Texas Landings, March 1962, 3 pp. |
| CFS-2916 | - Fish Meal and Oil, April 1962, 2 pp. |
| CFS-2921 | - Florida Landings, April 1962, 9 pp. |
| CFS-2900 | - Fisheries of the United States, 1961 (A Preliminary Review), 74 pp., illus., April 1961. This bulletin includes 1961 statistics on the United States catch, price indexes, manufactured fishery products, foreign trade, supplies of certain fishery products, fishery loan program, and world fisheries. Per capita consumption of fish in the United States increased to 10.9 pounds in 1961, a half pound more than in the previous year. This increase was divided equally between "fresh and frozen" and canned items. The supply of domestically-produced fresh and frozen products declined substantially, the report shows, even though the annual harvest was the Nation's second largest--5.2 billion pounds. Imports were up sharply due to increased receipts of groundfish fillets and blocks, and shrimp; however, both edible and nonedible imports established records. The total amount paid to United States fishermen and vessel owners amounted to \$358 million--nearly \$4 million more than 1960, but \$15 million less than the record \$373 mil- |

lion paid in 1958. The average price per pound was 6.94 cents, a low figure due to the record catch (2.3 billion pounds) of low-priced menhaden. San Pedro, Calif., was the leading United States fishing port in 1961 with respect to both volume and value--416 million pounds with an ex-vessel value to the fishermen of \$36 million. The figures on the 1960 world catch--a record of 83.2 billion pounds--recently compiled by the Food and Agriculture Organization of the United Nations are included in the report. Five countries accounted for well over 50 percent of the total catch--Japan (16.4 percent), China (Mainland) (13.3 percent), Peru (9.4 percent), U.S.S.R. (8.1 percent), and the United States (7.5 percent).

FL-536 - Recognizing Important Shrimps of the South, by William W. Anderson, 5 pp., illus., February 1962 (Revision of FL-366, December 1958, and Sep. No. 242, December 1949). Describes the more frequently taken species of shrimp along the South Atlantic and Gulf coasts of the United States which are of some commercial value. Includes illustrations of the white or common shrimp, brown shrimp, pink or brown-spotted shrimp, the seabob, rock shrimp, and the royal red shrimp.

Wholesale Dealers in Fishery Products, 1962 (Revised):

- SL- 4 - Rhode Island, 2 pp.
SL- 5 - Connecticut, 1 p.
SL- 9 - Delaware, 1 p.
SL-18 - Mississippi, 3 pp.
SL-23 - Washington, 7 pp.

Firms Canning, 1961 (Revised)

- SL-103 - Tuna, 2 pp.
SL-107 - Fish and Shellfish Specialties, 5 pp.
SL-119 - Squid, 1 p.

SL-161 - Producers of Packaged Fish, 1961, 7 pp. (Revised)

Sep. No. 652 - Chicago Receipts of Fresh and Frozen Fishery Products, and Wholesale Market Trends, 1961.

SSR-Fish. No. 389 - Oceanic Salinities off the South Atlantic Coast of the United States--Theodore N. Gill Cruises 1-9, 1953-54, by William W. Anderson, Joseph E. Moore, and Herbert R. Gordy, 212 pp., illus., August 1961.

SSR-Fish. No. 410 - Spring and Summer Temperatures of Streams Tributary to the South Shore of Lake Superior, 1950-60, by Bernard R. Smith, 63 pp., illus., March 1962.

Annual Report of the Gloucester Technological Laboratory, Fiscal Year 1961, by Joseph W. Slavin, Circular 139, 13 pp., illus., processed. A discussion of the highlights of the program and accomplishments of the Gloucester Technological Laboratory for fiscal year 1961 including research on the chemistry and biochemistry of fish, developments of grade standards and specifications, inspection and certification of fishery products, and studies on the preservation of fish. Also included is a list of publications written by laboratory personnel during 1961. The new technological laboratory at Gloucester was dedicated by the Bureau of Commercial Fisheries on June 17, 1960, and is staffed by 19 professional people trained in the fields of chemistry, food technology, and engineering.

Operations of the Bureau of Commercial Fisheries under the Saltonstall-Kennedy Act, Fiscal Year, 1960, 109 pp., illus., processed. The sixth annual report to the Congress of the activities of the U. S. Bureau of Commercial Fisheries during the fiscal year ending June 30, 1960, under the provisions of the Saltonstall-Kennedy Act of July 1, 1954. The Act makes available funds from import duties collected on foreign fishery products for the promotion of the free flow in commerce of domestic fishery products and provides for a wide range of research and services supporting the development and wise utilization of the nation's fishery resources and the stabilization of the domestic fishing industry. This publication discusses commercial fishery progress by geographic areas including nationwide programs such as technological programs, economic studies, statistical programs, Market News services, and marketing programs. Among the important accomplishments during fiscal year 1960: (1) methods were developed to determine amounts of unsaturated fatty acids and numbers of double-bond structures in fish oils; (2) methods were developed to prepare several polyunsaturated derivatives from fish oils which are of potential value in the food industry, in the fields of resins and plasticizers, and in other fields; (3) in New England an analysis of average landings of yellowtail flounder per day of fishing effort aided biologists in determining the factor causing fluctuations in the abundance of this species; (4) at 14 stations along the Middle Atlantic shelf of the Eastern United States, sea scallops were found in sufficient quantities to warrant a limited commercial fishery; (5) experiments demonstrated the advantage of suspended oyster cultch in the Chesapeake Bay; (6) positive identification of the early developmental stages of yellowfin menhaden was accomplished by artificial fertilization of eggs and rearing of the larvae in the South Atlantic; (7) in the Gulf of Mexico identifications of early larval stages of two penaeid shrimp were specific and important advancements toward estimation of the abundance, seasonal occurrence, and distribution of shrimp larvae; (8) the results of exploratory trawling cruises in Lake Erie showed that up to 5,000 pounds of smelt can be taken at certain times and in certain places in the waters of Ohio, Pennsylvania, and New York; (9) in California, listings of some 4 million oceanographic observations, along with selected summaries, have been obtained for an investigation of month-to-month and year-to-year changes in oceanic conditions over the past 25 years; (10) studies were initiated in the Pacific Northwest for determining the downstream migration paths and times of migration of young salmon in lakes behind dams; and

(11) a tagging study in Brooks Lake, Alaska, has shown the importance of specific racial groups occurring close to each other in a single lake system.

Our Commercial Fisheries, Conservation Notes, Circular 55, Revised October 1960. Informative bulletin containing fishing terminology, classification of fish, and facts man should know about fish and what affects their abundance and movements. Also included are data on the food chain, tagging, color marking, underwater television and Scuba divers, chemical and electrical aids, sounds of fish, sea mammals, international and interstate commissions, and the American catch. Research data and statistics on fishing for food are also covered.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number	Title
MNL-26	- Taiwan Fisheries in 1961, 7 pp.
MNL-34	- Fisheries in Greece, 1961, 16 pp.
MNL-54	- Fisheries in British Borneo, 1961, 3 pp.
MNL-57	- Fisheries in the Federal Republic of Germany - Annual Survey, 1961, 22 pp.
MNL-71	- Canada's Fishing Industry, 1961, 7 pp.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, April 1962, 15 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; Oregon and Washington receipts (domestic and imports) of fresh and frozen tuna and tunalike fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information, May 1962, 11 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Loma Station, San Diego 6, Calif.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, May 1962, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, May 1962, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort,

and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary--March 1962, 18 pp. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the month indicated.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, May 1962, 9 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle 4, Wash.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of other-trawl receipts reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE ARTICLE IS AVAILABLE ONLY FROM THE U. S. BUREAU OF COMMERCIAL FISHERIES BIOLOGICAL LABORATORY, SEATTLE, WASH.:

A Study of the Hokkaido King Crab (Hokkaido-san Tarabagani no Kenkyu), by Kilchi Nakazawa, Report No. 60-22528, 1960, printed. (Translated from Dobutsugaku Zasshi, vol. 24, no. 279, 1912, pp. 1-13.)

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE ARTICLE IS AVAILABLE ONLY FROM THE U. S. BUREAU OF COMMERCIAL FISHERIES BIOLOGICAL LABORATORY, HONOLULU, HAWAII:

The Copepod Fauna (Calanoida) and Zoogeographical Divisions of the North Pacific and Adjoining Waters, by K. A. Brodsky, 78 pp., illus., processed. (Translated from the Russian Izdatel'stvo Akademii Nauk SSSR, Moscow-Leningrad, 1957.)

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE ARTICLE IS NOT FOR GENERAL DISTRIBUTION BUT IS AVAILABLE FOR REFERENCE ONLY FROM THE U. S. BUREAU OF COMMERCIAL FISHERIES, P. O. BOX 3630, HONOLULU, HAWAII.

On the Distribution of Macroplankton in the Northern Half of the Indian Ocean, by N. M. Voronina, 13 pp., illus., processed, May 1962. (Translated from Okeanologia, vol. 2, no. 1, 1962, pp. 118-125.)

THE FOLLOWING SERVICE PUBLICATION IS FOR SALE AND IS AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Tank Culture of Tilapia, by Richard N. Uchida and Joseph E. King, Fishery Bulletin 199 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 62), 36 pp., illus., printed, 30 cents, 1962.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

AGAR-AGAR:

"Itanigusa Ahnfeltia plicata Yori Kanten no Shinseizoho Nikansuru Kenkyu. I" (Studies on New Method of Preparation of Agar Agar from Ahnfeltia plicata, I), by Y. Kojima and others, article, Journal of the Shimonoseki College of Fisheries, vol. 9, no. 1, 1960, pp. 43-52, illus., printed in Japanese with English summary. Yoshimi, Shimonoseki, Japan.

"Tsutei" (II--Shinta no Dasshoku Oyobi Dassui ni Tsuite) (III--On the Decolorization and Dehydration of Crude Agar Gel), vol. 9, no. 3, pp. 317-322.

"Tsutei" (III--Itani Kanten Seizo no Kogyoka ni Tsuite) (III--On the Industrialization for Manufacturing Itani Agar), vol. 9, no. 3, pp. 323-328.

ALASKA:

Annual Report of Progress, 1959-60 (Federal Aid in Fish Restoration Project F-5-R-1, Sport Fish Investigations of Alaska), Report No. 1-A, vol. 1, 142 pp., illus., processed, Alaska Dept. of Fish & Game, Sport Fish Division, Juneau, Alaska.

ALGAE:

"The Marine Algae of the Hundred Islands, Philippines," by Ernani G. Menez, article, The Philippine Journal of Science, vol. 90, no. 1, March 1961, pp. 37-86, illus., printed. National Institute of Science and Technology, P. O. Box 774, Manila, Philippines.

ALMANAC:

The Nautical Almanac for the Year 1963, 30 M, 311 pp., printed, \$2. U. S. Naval Observatory, Washington, D. C., 1962. (Available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Provides in a convenient form the data required for the practice of astronomical navigation at sea.

ARCTIC CHAR:

"Ikalupik"--The Arctic Char," article, Trade News, vol. 14, no. 9, April 1962, pp. 3-5, illus., printed. Director of Information and Consumer Service, Department of Fisheries, Ottawa, Canada. Describes, with numerous illustrations, the arctic char fishing operation of the Eskimos. Ikalupik, meaning "special fish" in English, is the name the Eskimos have given to the arctic char. The Eskimos have been encouraged to organize fishing cooperatives, procure fishing gear, freezing apparatus, and other equipment necessary for a commercial fishery. The char fisheries provide a good source of income for the Eskimo fishermen, and serve to reduce their reliance on hunting as a means of acquiring food supplies for their families.

BARNACLES:

The Attachment of the Barnacle, BALANUS APMPHITRITE NIVEUS Darwin, and Other Fouling Organisms to the Rock Shrimp, SICYNIA DORSALIS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Kingsley, by Bonnie Eldred, Contribution No. 62, 5 pp., illus., printed. (Reprinted from *Crustaceana*, vol. 3, part 3, pp. 203-206.) Florida State Board of Conservation Marine Laboratory, Maritime Base, Bayboro Harbor, St. Petersburg, Fla., 1962.

BRAZIL:

Pesca - 1960, *Estrutura e Producao* (Fisheries - 1960, Organization and Production), 45 pp., illus., processed in Portuguese. Ministerio da Agricultura, Servico de Estatistica da Producao, Avenida Pasteur no. 404, Rio de Janeiro, Brazil, April 1962.

CALIFORNIA:

Digest of Commercial Fish Laws, 1961-63, 30 pp., illus., printed. California Department of Fish and Game, 722 Capitol Ave., Sacramento 14, Calif. Explains the California commercial fishing laws. This booklet is not intended to replace the Fish and Game Code but to explain the Code to the fishing industry. Contains information on license provisions, species covered, the commercial fishing districts, provisions of the Code affecting the commercial fisheries, calendar of the fishing seasons, and use or possession of nets in certain districts.

CANADA:

Fisheries Council of Canada, *Annual Review, 1962*, 72 pp., illus., printed. Fisheries Council of Canada, Rm. 703, 77 Metcalfe St., Ottawa 4, Canada. Contains, among others, the following articles: "Quebec Fisheries, 1961," by Guy LeBlanc; "Water Pollution in British Columbia," by Michael Waldichuk; "Canada's Fisheries in 1961," by W. C. MacKenzie; "Commercial Fisheries of New Brunswick," by Leonce Chenard; "Rehabilitation of the Atlantic Oyster Industry," by Mary Hatheway; and "The Fishery in the ICNAF Convention Area in 1959," by Frank R. Thomas.

Fisheries Statistics of Canada, 1960 (New Brunswick), 32 pp., illus., printed in French and English, 75 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, June 1962. Consists of tables giving the quantity and value of the principal species of fish and shellfish landed in New Brunswick, 1948-60; quantity and value of manufactured fishery products, 1948-60; quantity and value of landings by species and fisheries districts, 1959-60; capital equipment in the primary fisheries operations, 1959-60; classification of powered fishing craft by over-all length, 1960; number of persons engaged in primary operations by fisheries districts, 1959-60; and persons engaged in the major fisheries, 1959-60.

Fisheries Statistics of Canada, 1960 (Quebec), 57 pp., illus., printed in French and English, C\$1. Queen's Printer and Controller of Stationery, Ottawa, Canada, May 1962. Consists of tables giving the quantity and value of the principal species of fish and shellfish landed in Quebec in 1948-1960; quantity and value of landings by species and fisheries districts, 1959-1960; quantity and value of manufactured fishery products by species, 1959-1960; capital equipment employed in primary operations by fisheries districts, 1959-1960; and number of persons engaged in primary operations by fisheries districts, 1959-1960. Also includes a map and description of Quebec's sea fisheries districts.

Journal of the Fisheries Research Board of Canada, vol. 19, no. 2, March 1962, pp. 173-363, illus., printed, C\$1.50. Queen's Printer and Controller of Stationery, Ottawa, Canada. Includes, among others, the following articles: "Migratory Behaviour of Juvenile Rainbow Trout, *Salmo gairdneri*, in Outlet and Inlet Streams of Loon Lake, British Columbia," by T. G. Northcote; "Tag Failure Associated with a Net Fishery as a Source of Experimental Error," by Robert R. Parker; "Dogfish Gelatin," by Shirley E. Geiger, Eve Roberts, and N. Tomlinson; "Olfactory Perception in Juvenile Salmon. I - Observations on Response of Juvenile Sockeye to Extracts of Foods," by J. R. McBride and others; "Photographing Halibut Otoliths for Measuring Growth Zones," by G. Morris Southward; and "A Method of Calculating Body Lengths from Otolith Measurements for Pacific Halibut and Its Application to Portlock-Albatross Grounds Data Between 1935 and 1957," by G. Morris Southward.

CANNING:

"As Conservas de Peixe no Mercado Ingles em 1961" (Canned Fish on the English Market in 1961), by Victor A. Martin; "As Conservas de Peixe Portuguesas e o Mercado Belga em 1961" (Portuguese Canned Fish on the Belgian Market in 1961), by Willy Moers; "A Situacao das Conservas de Peixe na Italia" (Status of Canned Fish in Italy), by Enrico Cresta; "Mercado de Franca" (Markets of France), by J. Cardoso, articles, *Conservas de Peixe*, vol. 17, no. 193, April 1962, pp. 63-65, 67-68, 71, 73, 77, 75, illus., printed in Portuguese. Sociedade Astoria, Lda., Requeirao dos Anjos, 68, Lisbon, Portugal.

"Etudes et Recherches sur la Fabrication des Conservas de thon de Madrague du Maroc (*Thunnus thynnus* L.)" (Studies and Research on the Canning of Tuna from the Madragues or Coastal Traps of Morocco), by R. Meesemaeker and Y. Schier, 27 pp., illus., printed in French. (Reprinted from *Revue de la Conserve*, December 1960 and January 1961.) Societe d'edition pour L'alimentation, 1 rue de la Reale, Paris 1, France.

CARP:

"Experiments on Induced Spawning of Indian Carps with Pituitary Injections," by H. Chaudhuri, article, *Indian Journal of Fisheries*, vol. 7, no. 1, 1960, pp. 20-48, illus., printed. Ministry of Food and Agriculture, New Delhi, India.

L'elevage de la carpe au Liban (Rearing of Carp in Lebanon), by J. A. Timmermans, Travaux, Ser. D., no. 29, 1960, 23 pp., illus., printed in French with English summary. Administration des Eaux et Forêts, Station de Recherches de Groenendaal, Groenendaal, Belgium.

CHESAPEAKE BAY:

Chesapeake Science, vol. 3, no. 1, March 1962, 61 pp., illus., printed, 75 cents. Natural Resources Institute of the University of Maryland, Chesapeake Biological Laboratory, Solomons, Md. Contains the following articles: "Sport Fishing Survey in 1960 of the Lower Patuxent Estuary and the 1958 Year-Class of Striped Bass," by L. W. Shearer, D. E. Ritchie, Jr., and C. M. Frisbie; "Age and Growth of Spot in Lower Chesapeake Bay, with Notes on Distribution and Abundance of Juveniles in the York River System,"

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by A. L. Pacheco; "Effects of Gamma Radiation on Two Decapod Crustaceans, *Palaeomonetes pugio* and *Uca pugnax*," by George H. Rees; "Occurrence of the Acanthocephalan Parasite, *Telosentis tenuicornis*, in the Spot, *Leiostomus xanthurus*, in Chesapeake Bay," by Harry W. Huizinga and A. James Haley; "Atlantic Menhaden Larvae in Virginia Coastal Waters," by W. H. Massmann, J. J. Norcross, and E. B. Joseph; "Predation of Bluefish on Young Atlantic Menhaden in Indian River, Delaware," by George C. Grant; and "The Atlantic Bonito, *Sarda sarda*, in Upper Chesapeake Bay, and Comments on the Seaside Fishery of Maryland," by Romeo J. Mansueti.

Chesapeake Science, vol. 3, no. 2, June 1962, 80 pp., illus., printed, 75 cents. Managing Editor, Natural Resources Institute of the University of Maryland, Chesapeake Biological Laboratory, Solomons, Md. Includes, among others, the following articles: "Quantitative Seasonal Aspects of Zooplankton in the Delaware River Estuary," by L. Eugene Cronin, Joanne C. Daiber, and Edward M. Hulburt; "Intraspecific Variation in the White Perch, *Roccus americanus* (Gmelin)," by William S. Woolcott; "Periods of Spawning and Setting of the Soft-Shell Clam, *Mya arenaria*, at Solomons, Maryland," by Hayes T. Pfizenmeyer; "Distribution of Species of *Cliona* (Boring Sponge) of the Eastern Shore of Virginia in Relation to Salinity," by Sewell H. Hopkins; "Summer Food and Growth of Chain Pickerel, *Esox niger*, in Brackish Waters of the Severn River, Maryland," by C. D. Meyers and R. J. Muncy; "Calico Crab, *Ovalipes ocellatus*, in Mid-Chesapeake Bay, Maryland," by Romeo J. Mansueti; "First Record of the King Mackerel, *Scomberomorus cavalla*, in Northern Chesapeake Bay, Maryland," by Grover Small and Romeo J. Mansueti; and "Distribution of Small, Newly Metamorphosed Sea Lampreys, *Petromyzon marinus*, and Their Parasitism of Menhaden, *Brevoortia tyrannus*, in Mid-Chesapeake Bay During Winter Months," by Romeo J. Mansueti.

CLAMS:

"The Pacific Razor Clam," by D. B. Quayle, article, *Trade News*, vol. 14, no. 9, March 1962, pp. 8-9, illus., printed. Director of Information and Consumer Service, Department of Fisheries, Ottawa, Canada. The only significant fishery for razor clams in Canada occurs out of Masset, British Columbia. This article describes the razor clam (*Siliqua patula*) as to appearance, methods of obtaining, and processing.

COD:

"Aspectos da Industria Nacional do Bacalhau" (Outlook of the National Cod Industry), by A. Torres Botelho, article, *Conservas de Peixe*, vol. 17, no. 193, April 1962, pp. 51, 53, illus., printed in Portuguese. Sociedade Astoria, Lda., Regueirao dos Anjos, 68, Lisbon, Portugal.

"Observations on the Cod Trawl Fishery in the Gulf of St. Lawrence During the Spring of 1958," by J. R. Clark and F. D. McCracken, article, *Annual Proceedings, International Commission for the Northwest Atlantic Fisheries*, vol. 8, 1958, pp. 99-100, printed. International Commission for the Northwest Atlantic Fisheries, Halifax, Nova Scotia, Canada.

COMMISSIONS:

(Atlantic States Marine Fisheries Commission) *Twentieth Annual Report* (to the Congress of the United States and to the Governors and Legislators of the Fifteen Compacting States), 80 pp., illus., printed. Atlantic States Marine Fisheries Commission, 200 E. College Ave., Tallahassee, Fla., June 1962. Summarizes the changes that have taken place during the past two decades in fisheries work by the Federal agencies and by state administrative agencies and laboratories along the Atlantic Coast. Includes condensed reports on the work of the Commission and of various committees. Also contains reports from the North Atlantic Section on the need for an Extension Service, Federal aid (S. 1230 Gruening bill), time-temperature studies on frozen fish products, Northeastern Resources Committee, and shellfisheries problems. The Middle Atlantic Section reports on sport fishery catch statistics, fish protein concentrate, Federal aid for state research, pollution of near-shore waters by small boats, Biological Committee, artificial reefs, shellfish sanitation, and striped bass regulations. The Chesapeake Bay Section discusses mid-Atlantic bight, report of Biological Committee, shellfish sanitation, and Potomac River Compact. The South Atlantic Section reports on shrimp, exploratory fishing, recommendations of Scientific Committee, and difficulty in getting Dingell-Johnson funds. Appendices include state legislation recommended, auditor's report, report of committees, and resolutions adopted by the Commission.

CURRENTS:

Manual of Current Observations (Supplement to Special Publication No. 215, Revised 1950 Edition), 10 pp., illus., printed, single copy 20 cents. Coast and Geodetic Survey, U. S. Department of Commerce, Washington, D. C., November 1961. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) The Coast and Geodetic Survey has made many changes in the methods used to observe, record, and process water currents since the publishing of the Manual of Current Observations in 1950. Several of the more important changes are given in this supplement.

ESTUARINE STUDIES:

Potential Research Benefits to be Derived from Estuarine Heterogeneity, by Robert M. Ingle, Contribution No. 63, 5 pp., printed. (Reprinted from *Tulane Studies in Zoology*, vol. 9, no. 5, April 16, 1962, pp. 295-299.) Florida State Board of Conservation, Tallahassee, Fla.

FACTORYSHIPS:

"Freezing Equipment for Ships," by M. B. F. Ranken, article, *Fish Trades Gazette*, No. 4047, pp. 11-14, printed. Industrial Newspapers Ltd., John Adams House, John Adams St., London, WC2, England, 1961.

Refrigeration in Fishing Vessels, by G. E. Eddie, 8 pp., printed. World Refrigeration and Air-Conditioning, 11a Gloucester Rd., London, SW7, England, April, 1961.

"Walfangmuttertschiff *Jury Dolgoruky*" (The Whale-catcher-Mothership *Jury Dolgoruky*), article *Schiffbautechnik*, vol. 11, 1961, pp. 59-68, 115-125, 235-

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241, illus., printed in German. VEB Verlag Technik, 13/14, Oranienburgerstrasse, Berlin C.2, Germany.

FAROE ISLANDS:

"The Fishery of the Faroes in 1961," article, *Faroes in Figures*, no. 18, June 1962, pp. 2-7, printed, Færo Amts Sparekasse, Thorshavn, Faroe Islands. Features a review of the fishery in the Faroes in 1961. Contains statistical tables on total catch; catch of demersal species and herring by fishing grounds, 1953-61 and 1952-1961, respectively; disposition of catch, 1952-61; annual output of processed commodities, 1953-61; exports of salt fish and dried cod by countries; and production of salt fish by fishing grounds and mode of catch.

FAUNA:

A Checklist of the Flora and Fauna of Northern Florida Bay and Adjacent Brackish Waters of the Florida Mainland Collected During the Period July, 1957 Through September, 1960, by Durbin C. Tabb and Raymond B. Manning, Contribution No. 354, 88 pp., illus., printed. (Reprinted from *Bulletin of Marine Science of the Gulf and Caribbean*, vol. 11, no. 4, December 1961, pp. 552-649.) Marine Laboratory, University of Miami, 1 Rickenbacker Causeway, Miami, Fla.

FEEDING OF FISH:

Rate of Metabolism and Food Requirements of Fishes, by G. G. Winberg, Translation Series No. 194, 248 pp. (Translated from the Russian under the editorial direction of F. E. J. Fry and W. R. Ricker.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1960.

FISH CULTURE:

Compte rendu de Mission piscicole aux Etats-Unis et au Canada, Debut septembre - mi-octobre 1958 (Account of the Fish Culture Mission to the United States and Canada, Beginning September - Mid-October 1958), by Marcel Huet, Travaux, Ser. D, no. 25, 1959, 40 pp., illus., printed in French. Administration des Eaux et Forets, Station de Recherches de Groenendaal, Groenendaal, Belgium.

FISHERIES MANAGEMENT:

"Fish and the Freedom of the Seas," by S. V. Ozere, article, *Trade News*, vol. 14, no. 9, March 1962, pp. 3-5, 11, printed. Director of Information and Consumer Service, Department of Fisheries, Ottawa, Canada. According to the author, "While it is essential for Government to be thoroughly acquainted with the problems of the fishing industry, it is equally important for industry to have a good knowledge of the problems of Government. Only in this way can we bring about sound development of our resources for the benefit of the present and future generations." In this article, the author discusses some of the international aspects of the problems encountered in the management of sea fisheries.

FISHERY COOPERATIVES:

"An Experiment in Fisheries Cooperatives," by G. T. Taylor, article, *West Indies Fisheries Bulletin*, no. 6, November-December 1961, pp. 1-9, processed. Ministry of Natural Resources and Agriculture, Federal House, Port of Spain, Trinidad, West Indies. Discusses an experiment used to develop the

fisheries in St. Lucia, utilizing mechanized boats with a variety of gear, and organized operation of fishing boats and marketing fish.

FISH FINDER:

Comparison Between Survey Map by 14.5 KC. Fish-Finder and That by 200 KC. Fish-Finder with Sharp Beam on Same Sea, by Tomiju Hashimoto and Yoshinobu Maniwa, Report No. 60-13257, 1960, 20 pp., illus., printed, \$1.10. (Translated from *Gyosen Kenkyu Giho*, no. 12, 1958, pp. 149-155.) Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.

FISH LIST:

"An Annotated List of the Fishes of Great Smoky Mountains National Park, by Robert E. Lennon, article, *Journal of the Tennessee Academy of Science*, vol. 37, no. 1, 1962, pp. 5-7, printed. Secretary, Tennessee Academy of Science, Belmont College, Nashville, Tenn.

FISH MANAGEMENT:

"Fisheries Management in Australia," by D. J. Gates and D. Macdonald, article, *Fisheries Newsletter*, vol. 21, no. 2, February 1962, pp. 21-24, illus., printed. Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia. A summary of the fisheries management program of Australia. Includes a table of major management measures in force January 1, 1962, under the Fisheries Act 1952-1959, and the fisheries acts of the States. Also contains maps illustrating the areas in which closed seasons apply, and the area where Danish seine mesh regulations are in force.

Fishery Management, by R. S. Fort and J. D. Brayshaw, 394 pp., illus., printed. Faber and Faber, 24 Russell Square, London WC1, England, 1961.

FISH MEAL:

"Fiskemelindustrien i Peru" (The Fish Meal Industry in Peru), article, *Konkylien*, vol. 6, no. 1-2, December 1961, pp. 19, 29, printed in Norwegian with English summary. Stord Marin Industri A. S., Bergen, Norway.

FISH POPULATIONS:

Comparison of Variations of Fishing Condition in a Whole Year Among Each Subarea and Migration of Fish Groups in the Southern Part of the Pacific Ocean, by J. Nakagome, Report No. 59-19361, August 31, 1959, 10 pp., printed, microfilm \$1.80, photocopy \$1.80. Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C.

Correlation Between the Movement and Appearance of Fish School, by Torshiro Kuroki, Report No. 59-22355, 1959, 29 pp., illus., printed, microfilm \$2.40, photocopy \$3.30. (Translated from *Kagoshima Daigaku Suisan Gakubu Kiyo*, vol. 7, February 1959, pp. 87-101.) Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C.

FOOD AND AGRICULTURE ORGANIZATION:

The Food and Agriculture Organization has published reports describing that Agency's activities under

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the Expanded Technical Assistance Program for developing the fisheries of many countries. These reports have not been published on a sales basis, but have been processed only for limited distribution to governments, libraries, and universities. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

Report on the Indo-Pacific Fisheries Statistics Training Center Held in Bangkok, Thailand, 19 June to 31 July, 1952, FAO Report No. 357, 58 pp., illus., 1955.

FREEZE-DRYING:

"Accelerated Freeze Drying. II--Fundamental Design Problems," by K. Ward, article, Food Manufacture, vol. 36, no. 2, 1961, pp. 60-63, 66, illus., printed, Leonard Hill Ltd., 9 Eden St., London NW1, England.

"Torrering of Levnedsmidler" (Drying of Foodstuffs), by E. E. Petersen, article, Ingeniørens Ugeblad, vol. 5, no. 28, 1961, 12 pp., illus., printed in Danish. Ingeniørhuset, 31, Vester Farimagsgade, Copenhagen-V., Denmark.

FREEZERSHIP:

Fishroom Insulation and Refrigeration--Some Experiences on a Modern Trawler, by J. Waterman, Torrey Research Report No. 2, 4 pp., printed, Torrey Research Station, Aberdeen, Scotland, 1960.

"The Frozen Food Story," by Sheila R. Naidoo, article, Liberia Chamber of Commerce Journal, pp. 12-13, illus., printed, 25 cents. Consolidated Publications, Inc., The Simpson Bldg., Center St., P. O. Box 470, Monrovia, Liberia. Describes the fish-factory trawler, The Fairtry III, and methods used to process and freeze fish at sea. A diagram showing various sections of the vessel is also included.

FREEZING:

"Gyoniku no Tokusei ni Kansuru Kenkyu. III--Chushutsu Actomyosin no Toketsu ni Yoru Fuyokasei" (Studies on the Characteristic Quality of Fish Meat. III--On Insolubility of Extracted Actomyosin Brought About by Freezing), by T. Tokunaga and M. Nakamura, article, Bulletin, Hokkaido Regional Fisheries Research Laboratory, no. 23, 1960, pp. 61-66, illus., printed in Japanese with English summary. Hokkaido Regional Fisheries Research Laboratory, Yoichi, Hokkaido, Japan.

"Konveirnyi Skoromorozil'nyi Apparat na Murmanskom Pybokombinate i evo Ispytanie" (Conveyor-Type Quick Freezer at the Murmansk Fish Processing Plant and Its Testing), by I. T. Brosalin, A. K. Kaminarskaya and G. E. Martyshekin, article, Kholodil' naya Tekhnika, no. 1, 1962, pp. 34-37, illus., printed in Russian. Four Continent Book Corp., 822 Broadway, New York 3, N. Y.

FRESH-WATER FISH:

"Bacteriological Studies of Freshwater Fish. I--Isolation of Aerobic Bacteria from Several Species of Ontario Fish," by T. P. T. Evelyn and L. A. McDermott, article, Canadian Journal of Microbiology, vol. 7, 1961, pp. 375-382, illus., printed, National Research Council, Ottawa, Canada.

"Fisheries Research Team Provides Practical Aid to Industry. IV--Freshwater Fish Bacteria," by A. S. Bogoslawski, article, Canadian Fisherman, vol. 48, no. 7, 1961, p. 34, printed, National Business Publications Ltd., Gardenvale, Quebec, Canada.

Practical Fresh Water Fishing, by Francis E. Sell, 198 pp., illus., printed, Ronald Press Co., 15 E. 26 St., New York 10, N. Y.

FROZEN FOOD:

"AFDOUS Frozen Food Code," article, Quarterly Bulletin, vol. 26, no. 1, January 1962, pp. 25-42, printed, single copy \$1.00. Association of Food and Drug Officials of the United States, c/o State Department of Health, Austin 1, Texas. The Frozen Foods Code was adopted by the Association of Food and Drug Officials of the United States (AFDOUS) in June 1961 and is designed to be used as a guide or, with the addition of legal language and penalties, may be adopted in part or in its entirety as regulations or law. Contains sections on definitions, frozen food, construction and layout of frozen food plants, design and construction of frozen food processing equipment, operating practices for the commercial manufacture of frozen food, transportation, warehousing, and retail.

GERMANY:

Die Dokumentationsgrundlagen der Forschungsstelle--Stand: Ende 1961 (Basic Bibliography of the Research Agency--Year Ending 1961), No. 1/6, 50 pp., processed in German. Forschungsstelle für Fischereiwissenschaft, Parkstrasse 50, Bremen, Germany, March 1962.

Einweihung der Bundesforschungsanstalt für Fischerei am 1. Juni 1962 (Dedication of the Federal Institute for Fishery Research on June 1, 1962), by P. F. Meyer-Waarden, Special Issue, Archiv für Fischereiwissenschaft, vol. 13, supplement I, May 1962, 156 pp., illus., printed in German. Herausgegeben von der Bundesforschungsanstalt für Fischerei, Hamburg, Germany. (Available from Westliche Berliner Verlagsgesellschaft Heenemann KG, Berlin-Wilmersdorf, Germany.)

Einweihung der neuen Bundesforschungsanstalt für Fischerei in Hamburg-Altona, 1. Juni 1962 (Dedication of the New Federal Institute for Fishery Research in Hamburg-Altona on June 1, 1962), Special Issue, Allgemeine Fischwirtschaftszeitung, no. 21, May 1962, 48 pp., illus., printed in German. Verlag Carl Th. Gorg, P. O. Box 406, Bremerhaven F., Germany.

The Fishing Industry of the Federal Republic of Germany, by P. F. Meyer-Waarden, 88 pp., illus., printed, DM4 (US\$1). Land- und Hauswirtschaftlicher Auswertungsdienst e. V., Heerstr. 124, Bad Godesberg, Germany, 1961. (Available from Messrs. Hans Meister KG, Postfach 444, Kassel, Germany.) This survey of the fishing industry of Germany covers four major topics: the natural conditions, structure, economic importance, and promotion of the fishing industry. The first discusses formation of the coast, areas of the sea fishery and fresh-water fishery, and transport channels from the fishing grounds to the consumers. The second includes diagrams, charts, and illustrations of different types of sea fishery,

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ports and markets, preparation and processing of fish, and fish trade. The section on economic importance is made up of statistical tables. The last section deals with the organization of the fishery administration, fishery policy, legislation and protection, and education and economic advisory service.

HERRING:

"Aktuellt om Skarpsillundersökningar" (Present Situation Concerning Sprat Investigations), by Armin Lindquist, article Svenska Vastkustfiskaren, vol. 32, no. 3, February 10, 1962, pp. 56-57, illus., printed in Swedish. Svenska Vastkustfiskarnas Centralforbund, Goteborg, Sweden.

"Fabrikssildfisket ved Island" (The Herring Fishery off Iceland), by Harald Kaarstad, article, Konkylten, vol. 6, no. 1-2, December 1961, pp. 7-10, 26-28, illus., printed in Norwegian with English summary. Stord Marin Industri A. S., Bergen, Norway.

Measurement of the Viscosity of Herring Solubles, by W. A. B. Thomson and others, Circular No. 21, 5 pp., illus., processed. Fisheries Research Board of Canada, Technological Station, Vancouver, B. C., Canada, April 1958.

"Slideinnsiget 1962" (Herring Detection 1962), by Finn Devold, article, Fiskets Gang, vol. 48, no. 17, April 26, 1962, pp. 255-257, illus., printed in Norwegian. Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Slideundersøkelser i Norskehavet med F/F Johan Hjort, 5.-17. desember 1961" (Herring Research in the Norwegian Sea with the Research Vessel Johan Hjort, December 5-17, 1961), by Ole J. Ostvedt, article, Fiskets Gang, vol. 48, no. 17, April 26, 1962, p. 258, illus., printed in Norwegian. Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

Study on Desoxyribose Nucleic Acid of Herring Spermatozoa by Diffusion Measurement, by Kojiro Iso and Itaru Watanabe, Report No. 59-14632, 1959, 15 pp., printed, microfilm \$2.40, photocopy \$3.30. (Translated from Nihon Kagaku Zasshi, vol. 78, no. 9, 1957, pp. 1268-1272.) Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C.

INDONESIA:

Scientific Facilities and Information Services of the Republic of Indonesia, by John O. Sutter, Pacific Scientific Information No. 1, 137 pp., illus., printed, \$1. The Manager, Pacific Scientific Information Center, Bishop Museum, Honolulu 17, Hawaii, 1961.

INTERNATIONAL COMMISSIONS:

(International North Pacific Fisheries Commission) Annual Report, 1960, 123 pp., illus., printed, International North Pacific Fisheries Commission, 6640 NW. Marine Dr., Vancouver 8, B. C., Canada, 1961. This is the seventh consecutive annual report of the International North Pacific Fisheries Commission, established by a Convention between Canada, Japan, and the United States on June 12, 1953, for the purpose of promoting and coordinating the necessary scientific studies and to recommending the required conservation measures in order to secure the maximum sustained productivity of

fisheries of joint interest. Contains a summary account of the annual meeting of the Commission held in Vancouver, B. C., Canada, November 7-11, 1960; summary of administrative activities during the year; and progress reports on research conducted by the member governments under the Commission's program.

(International North Pacific Fisheries Commission) Proceedings of the Eighth Annual Meeting, 1961. Parts 1 and 2, 70 and 314 pp., respectively, processed. International North Pacific Fisheries Commission, 6640 N. W. Marine Dr., Vancouver 8, B. C., Canada. Part 1 covers the agenda, list of participants, minutes of sessions, report of the Committee on Finance and Administration, and the administrative report for 1961. The auditors' report for the fiscal year ended June 30, 1961, appears in the appendix. Part 2 consists of the report of the Committee on Biology and Research for 1961. It contains numerous appendices covering, among other items, reports of various sub-committees.

ITALY:

Annuario Statistico della Pesca e della Caccia, 1961 (Annual Statistics of Fish and Game, 1961), vol. 9, 1962, 182 pp., illus., printed in Italian. Istituto Centrale di Statistica, Via C. Balbo, 16 - Rome, Italy. Includes data on 1960 landings of fish and shellfish, sales and prices by species, number and types of vessels engaged in fishing, etc.

JAMAICA:

"Fisheries Development in Jamaica--A Progress Report," by A. G. Kirton, article, West Indies Fisheries Bulletin, no. 6, November-December 1961, pp. 10-15, processed. Ministry of Natural Resources and Agriculture, Federal House, Port of Spain, Trinidad, West Indies. Discusses progress made by the development program undertaken by the Fisheries Division of the Ministry of Agriculture and Lands in Jamaica in both marine and fresh-water or inland fisheries. Deals with fishing boats, fishing methods, fish-culture research, and extension work.

JAPAN:

Bulletin of the Hokkaido Regional Fisheries Research Laboratory, no. 24, March 1962, 212 pp., illus., printed. Hokkaido Regional Fisheries Research Laboratory, Yoichi, Hokkaido, Japan. Contains the following articles: "Studies on the Age and Growth of Crustacea," by Hiroshi Kurata; "An Ecological Study of Laminaria angustata Kjellman on the Coast of Hidaka Prov., Hokkaido," by Yoshio Hasegawa; "The Relation Between the Size of Mesh of Salmon Gill Net and the Length of Salmon in the Catches," by Mitsuo Konda; "The Investigation of Salmon Shark as a Predator on Salmon in the North Pacific, 1960," by Osamu Sano; "On the Distribution of Zoea Larvae of King Crab, Paralithodes camtschatica, in the Southeastern Bering Sea in 1960," by Isamu Takeuchi; "Histological Studies on Ovarian Eggs of Herring, Clupea pallasii, with Special Reference to So-called 'Shiniko' (Abnormal Eggs)," by Rikiichi Ishida, Takeo Sasaki, and Setsuko Arita; "Studies on the Bound Water in Fish Muscle. A New Method of Bound Water Determination and Some Application Thereof to Fish Muscle," by Hiroshi Oshima; "Studies on the Freezing Technique of Alaska Pollack in Bering Sea for the Material of Fish Sausage and 'Kamaboko'," by

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Shu Tanaka and others; "Studies on Freezing and Refrigeration of Marine Products. Part II. On Drip and Heat Juice Loss in Frozen Cod Fillets," by Kaoru Tamoto and Shu Tanaka; "Studies of Muscle of Aquatic Animals. I--On the Relation of Protein Solubility to Setting-Forming Ability," by Kaoru Tamoto and Toru Fukumi.

"Le Developpement de la Grande Peche Industrielle Japonaise" (The Development of the Large Japanese Commercial Fishing Industry), by F. Doumenge, article, *La Peche Maritime*, vol. 41, no. 1008, March 1962, pp. 147-155, illus., printed in French, La Peche Maritime, 190, Boulevard Haussmann, Paris, France.

JAWFISH:

Notes on the West Atlantic Jawfishes, OPISTHOGNATHUS AURIFRONS, O. LONCHURUS and GNATHYPOPS BERNUDEZI, by James E. Bohlke and Lowell P. Thomas, Contribution No. 346, 14 pp., illus., printed. (Reprinted from *Bulletin of Marine Science of the Gulf and Caribbean*, vol. 11, no. 4, December 1961, pp. 503-516.) Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Florida.

JELLYFISH:

"Synopsis of the Medusae of the World," by L. P. Kramp, article, *Journal of the Marine Biological Association of the United Kingdom*, vol. 40, 1961, 469 pp., printed, \$20. Marine Biological Association of the United Kingdom, Cambridge University Press, 200 Euston Rd., London NW1, England.

LOBSTER:

"Le Bandage des Pinces de Homards" (Securing the Claws of Lobsters), article, *La Peche Maritime*, vol. 41, no. 1008, March 1962, pp. 156-157, illus., printed in French, La Peche Maritime, 190, Boulevard Haussmann, Paris, France.

MACKEREL:

"Untersuchungen über die Biologie der Makrele (*Scomber scombrus* L.) in der Nordsee" (Research on the Biology of the Mackerel (*Scomber scombrus* L.) in the North Sea), by Erdal Aker, article, *Berichte der Deutsche Wissenschaftliche Kommission für Meeresforschung*, N. F., vol. 16, no. 2, 1961, pp. 105-128, illus., printed in German with English summary. Deutsche Wissenschaftliche Kommission für Meeresforschung, E. Schweizerbart'sche Verlagsbuchhandlung (Nagel u. Obermiller), Stuttgart W., Germany.

MALAYA & SINGAPORE:

Scientific Facilities and Information Services of the Federation of Malaya and State of Singapore, by John O. Suter, Pacific Scientific Information No. 2, 51 pp., illus., printed, 50 cents. The Manager, Pacific Scientific Information Center, Bishop Museum, Honolulu 17, Hawaii, 1961.

MANAGEMENT AIDS:

Improving Your Product's Value, by Robert E. Holmes and Thomas M. Trainer, Management Aids, No. 140, 4 pp., printed. Small Business Administration, Washington 25, D. C., May 1962. Discusses steps small businessmen can follow as they seek to improve the value of their products. Among such steps are determining what is "value" in a product, by-passing the pitfalls in judging value, deciding the

effect you want the value improvement to have on customers, looking for new ideas, evaluating new ideas, tooling up to make the improved product, and keeping ahead of the demand for value. Points out that an owner-manager can increase his chances for success by having several improvement ideas in various stages of action. Such a procedure also helps him to inject current marketing information into his value improvement projects.

MARINE BORERS:

Destructive Marine Borers, by F. A. McNeill, Australian Fisheries Leaflet No. 4, 4 pp., illus., printed. (Reprinted from Fisheries Newsletter, vol. 20, no. 5.) Fisheries Newsletter, Commonwealth Fisheries Office, Department of Primary Industry, Canberra, Australia.

MARINE ORGANISMS:

Relationships of Some Marine Organisms of the Northeast Pacific to Water Temperatures, Particularly During 1957 Through 1959, by John Radovich, Fish Bulletin No. 112, 62 pp., illus., printed. California Department of Fish and Game, Printing Division, Documents Section, Sacramento 14, Calif., 1961.

MARINE SCIENCE:

Bulletin of Marine Science of the Gulf and Caribbean, vol. 12, no. 1, March 1962, 168 pp., illus., printed, \$2. Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Virginia Key, Miami 49, Fla. Contains, among others, the following articles: "Seasonality of Fishes on a South Florida Shore," by Victor G. Springer and Andrew J. McErlean; and "The Biology of the Flyingfish, *Hirundichthys affinis* (Günther)," by John B. Lewis, J. K. Brundritt, and A. G. Fish.

MARKETING:

Selling Meats and Seafoods to the Armed Forces, 16 pp., illus., processed. Headquarters, Defense Subsistence Supply Center, 226 W. Jackson Blvd., Chicago 6, Ill., April 1962. Gives a brief history of the Defense Subsistence Supply Center (DSSC), and describes how it buys food for the Armed Forces and how one may qualify as a potential supplier. Also includes a listing of meats and seafoods purchased by the DSSC, a map showing location of supply centers, and samples of various forms used by the organization.

MINK RATIONS:

"Feeding of Raw Carp," by Phil J. Mingo, article, *National Fur News*, vol. 34, no. 4, May 1962, p. 13, printed. Broyles, Allebaugh & Davis, Inc., 200 Clayton St., Denver 6, Colo. Use of special high-protein supplements, along with fortified cereals, allows ranchers in many areas to use large quantities of products that are locally abundant and low priced. One of these products is carp, or other rough fish fed raw.

"Fish in the Mink Ration," by Walter G. Jones, article, *National Fur News*, vol. 34, no. 4, May 1962, pp. 11, 30, 33, illus., printed. Broyles, Allebaugh & Davis, Inc., 200 Clayton St., Denver 6, Colo. In the past 10-15 years fish and fishery byproducts have become an increasingly important staple in the rations of ranch mink. Discusses the use of fish in mink food including species of fish, source, and amounts used; problems encountered, and research being conducted.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

MISCELLANEOUS:

Annual Report of the Board of Regents of the Smithsonian Institution--Showing the Operations, Expenditures, and Condition of the Institution for the Year Ended June 30, 1960, Publication 4435, 87th Congress, 1st Session, House Document No. 9, Part 2, 615 pp., illus., printed. Smithsonian Institution, Washington 25, D. C. Includes, among others, the following reports: "Photography of the Ocean Floor," by A. S. Laughton; "History of a Tsunami" (the experiences of some fishermen in a seismic sea wave), by Elliott B. Roberts; "Luminescence in Marine Organisms," by J. A. C. Nicol; and "Problems Involved in the Development of Clam Farms," by Harry J. Turner, Jr.

MOTHER-OF-PEARL:

"42 pc Fall in MOP Shell Take," article, Fisheries Newsletter, vol. 21, no. 5, May 1962, pp. 17-18, illus., printed. Commonwealth Fisheries Office, Dept. of Primary Industry, Canberra, Australia. Contains statistics of Australian production of mother-of-pearl (MOP) shell during 1961. Includes tables showing MOP and trochus production, 1957-61; exports of MOP and trochus shells; exports of allshell (excluding re-exports); vessels and men employed, 1957-61; and labor force, 1961.

NAVIGATION:

United States Coast Pilot 1--First Supplement, Sixth (March 26, 1960) Edition, 8 pp., printed. Coast and Geodetic Survey, U. S. Department of Commerce, Washington 25, D. C., January 6, 1962. Changes through January 6, 1962.

United States Coast Pilot 2--First Supplement, Sixth (September 10, 1960) Edition, 7 pp., printed. Coast and Geodetic Survey, U. S. Department of Commerce, Washington 25, D. C., January 6, 1962. Changes from date of edition to Notice to Mariners 1 of January 6, 1962.

United States Coast Pilot 4--Second Supplement, Atlantic Coast, Cape Henry to Key West, Sixth (September 12, 1959) Edition, 12 pp., printed. Coast and Geodetic Survey, U. S. Department of Commerce, Washington 25, D. C., January 6, 1962. Changes from date of edition through Notice to Mariners 1 of January 6, 1962.

United States Coast Pilot 7--Third Supplement, Pacific Coast, California, Oregon, Washington, and Hawaii, Eighth (February 21, 1959) Edition, 22 pp., printed. Coast and Geodetic Survey, U. S. Department of Commerce, Washington 25, D. C., January 6, 1962. Changes from date of edition through Notice to Mariners 1 of January 6, 1962.

United States Coast Pilot 8--Pacific Coast, Alaska--Dixon Entrance to Cape Spencer, Eleventh Edition, 246 pp., printed, \$2.50. U. S. Department of Commerce, Coast and Geodetic Survey, Washington 25, D. C., January 6, 1962.

United States Coast Pilot 9--Seventh Supplement, Alaska, Cape Spencer to Arctic Ocean, Sixth (November 6, 1954) Edition, 36 pp., printed. Coast and Geodetic Survey, U. S. Department of Commerce, Washington 25, D. C., January 6, 1962. Changes through January 6, 1962.

NETS:

"Farg--Fiskliget. IV" (Color--Fishability. IV), by G. Molin, article, Ostkusten, vol. 33, no. 5, 1961, pp. 21-25, illus., printed in Swedish. Sveriges Kust- och Havsfiskare, Hudiksvall, Sweden.

Rapports et Proces-Verbaux des Reunions (International Fisheries Convention of 1946, Committee on Mesh Difficulties, Report of the Scientific Sub-Committee, presented at the Seventh Meeting of the Permanent Commission, November 1958), vol. 151, 39 pp., illus., printed, Kr. 20 (US\$1.75). Conseil Permanent International pour l'Exploration de la Mer (International Council for Exploration of the Sea), Charlottenlund Slot, Denmark, November 1960. This report is in two parts. Part I, the edited version of which is reproduced here, deals with mixed fisheries, that is, fisheries in which trawls with meshes smaller than those specified by the 1946 Convention are used for the purpose of capturing unprotected species listed in Article 6 of the Convention, but in which varying quantities of protected species listed in Annex II of the Convention may also be caught. The statistics for these fisheries up to the end of 1957 are presented, together with an assessment, so far as is possible on the data available, of the significance of the by-catch of protected species in relation to the fisheries for those species prosecuted in the same area with Convention mesh sizes.

NIGERIA:

Report on the Fisheries of Nigeria, 1961, by A. R. Longhurst, 57 pp., illus., processed. Federal Fisheries Service, Ministry of Economic Development, Lagos, Nigeria. The result of a fact-finding survey of Nigerian fisheries. It includes data both on the status and development of the fisheries themselves and of research and investigation programs undertaken by the various governmental agencies concerned with fisheries. Covers the organization of fisheries administration; inventory of facilities; survey of fish requirements, consumption, and importation; account of fisheries resources available to Nigeria. Also covers a survey of indigenous marine and fresh-water fisheries; development of the present mechanized fleet; fisheries development programs; and management, investigational, and research programs. Includes a register of trawlers operating out of Lagos, as of January 1, 1961; landing statistics, Lagos trawlers, 1959-1960; and a bibliography of literature relevant to Nigerian fisheries investigations.

NORWAY:

Beretning fra Fiskeridirektoratets Havforskningsinstitutt, 1958-59 (Report from the Sea Research Institute of the Fisheries Directorate, 1958-59), by Gunnar Rollesfenn, 50 pp., illus., printed in Norwegian. (Reprinted from Årsberetning vedkommende Norges Fiskerier, no. 2, 1959.) A.s. John Griegs Boktrykkeri, Bergen, Norway, 1961.

"Forekomst av egg og yngel av fisk i vest- og nordnorske kyst- og bankfarvann varen 1961" (The Occurrence of Egg and Larvae of Fish in the Western and Northern Norwegian Coast and Seaways During 1961), by Kr. Fr. Wiborg, article, Fiskets Gang, no. 11, March 15, 1962, pp. 161-164, illus., printed in Norwegian. Fiskeridirektoratet; Bergen, Norway.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

"A Industria de Conservas de Peixe Norueguesa em 1961" (Norwegian Fish Canning Industry in 1961), by Olva Omland and Trygve Oree, article, *Conservas de Peixe*, vol. 16, no. 192, March 1962, pp. 23-24, illus., printed in Portuguese, Sociedade Astoria, Lda., Requeirao dos Anjos, 68, Lisbon, Portugal.

"Les Peches Norvegiennes" (Norwegian Fisheries), by M. Hohns, Sellaeg, article, *France Pêche*, vol. 7, no. 59, February 1962, pp. 39-42, illus., printed, France Pêche, Boite Postale 179, Lorient (Morbihan), France.

OCEANOGRAPHY:

Reference Sources for Oceanographic Station Data (Provisional), by National Oceanographic Data Center, Catalog Series, Publication C-1, 201 pp., printed, \$2.00. U. S. Navy Hydrographic Office, Washington 25, D. C. This publication is an advance provisional printing of a catalog of reference sources for oceanographic station data and is intended for limited distribution; a fully edited first edition will follow. The National Oceanographic Data Center receives, compiles, processes, and preserves worldwide oceanographic station data from all available sources, serves as a central repository, and disseminates these data for use by the scientific community and the general public. This publication has been prepared as a catalog of the Center's holdings of source material containing oceanographic station data and to provide users of the data with the necessary bibliographic information on source material used.

Serial Atlas of the Marine Environment--Sea Surface Temperature Regime in the Western North Atlantic, 1953-1954, by Robert L. Pyle, Folio 1, 33 pp., illus., printed, \$7.50. Serial Atlas of the Marine Environment, American Geographical Society, Broadway at 156th St., New York 32, N. Y. A marine atlas based upon a study of sea surface temperature observations in the western North Atlantic for the years 1953-54. The objective of the study was to evaluate these data for environmental research and to develop techniques for converting them into meaningful descriptions of the surface temperature regime. The plates in this folio illustrate the methods of analysis which have been developed. The study demonstrates how this material can bring out detailed patterns not attainable otherwise, points out features of the data which are pertinent to their usefulness for environmental research, and describes pronounced differences in temperature regime between the particular years 1953 and 1954. Subsequent folios of the Atlas will study other aspects of the marine environment, such as biological, geological, physical, or chemical.

OCEAN PERCH:

"Zum Rassenproblem beim Kotbargsch--Rotbargschformen aus dem zentralen nordatlantik (zwischen den Faroern und Gronland-West)" (The Problem of Race in the Ocean Perch--Shape of the Ocean Perch from the Central North Atlantic, Between the Faroe Islands and West Greenland), by Adolf Kotthaus, article, *Berichte der Deutsche Wissenschaftliche Kommission für Meeresforschung*, N. F., vol. 16, no. 1, 1961, pp. 18-50, illus., printed in German, Deutsche Wissenschaftliche Kommission für Meeresforschung.

schung, E. Schweizerbart'sche Verlagsbuchhandlung, (Nagele u. Obermiller), Stuttgart W., Germany.

OUTBOARD MOTORS:

The Contribution by the Outboard Motor to the Mechanization and Development of the Fishing Industry, by Ernst Ott, 6 pp., printed, (Reprinted from *Proceedings of the Gulf and Caribbean Fisheries Institute*, Thirteenth Annual Session, pp. 163-168, November 1960.) Outboard Marine International S. A., P. O. Box 830, Nassau, Bahamas. Describes the vast potential for the outboard motor in the fishing industry today. Explains how the mechanization of fisheries through the medium of the outboard motor has improved the economy and raised the standard of living in more than a score of countries throughout the world during the past six years.

Outboard Power Replaces Sails and Oars, 3 pp., illus., printed, (Reprinted from *Fishing News International*, October 1961.) Outboard Marine International S. A., P. O. Box 830, Nassau, Bahamas. Explains how the outboard motor is helping to provide more food for a hungry world by means of increased production in the fishing industry. Also discusses the donations of outboard motors to underdeveloped countries, the wide power range of outboards manufactured today, and methods being employed for the education of the fishermen in mechanization.

Outboards at Work, by William H. Taylor, 62 pp., illus., printed, (Reprinted from *Fishing News International*, October 1961.) Outboard Marine International S. A., Box 830, Nassau, Bahamas. Portrays, with numerous photographs, the extensive use and versatility of the outboard motor. Chapter 2 describes the use of the outboard motor in the commercial fisheries. According to the author, "Their suitability for most kinds of commercial fishing has spread in two directions. On the one hand, the outboard has taken the place of the oar, the paddle and the sail among small-boat fishermen who formerly depended on those means of getting to and from the fishing grounds and for hauling their nets and drags. On the other hand, the outboard is taking the place, in larger boats, of inboard engines. In both fields, it is bringing in millions of pounds of fish that, without the outboard motor, would not have been caught to feed the world's people, and it is putting more money into the pockets of fishermen who could not make as much by their older methods."

OYSTERS:

Oyster Farming in the Maritimes, by J. C. Medcof, 158 pp., illus., printed, \$1.75. Fisheries Research Board of Canada, Ottawa, Canada. (Available from Queen's Printer and Controller of Stationery, Ottawa, Canada.) Contains information on oyster farming, which is the practice of one or more of the many methods of improving the quality or increasing the quantity of oysters produced. Outlines the methods oyster farmers should follow, warns against the pitfalls they will likely encounter, and gives information on marketing and storing. All phases of the industry are covered, and are illustrated by photographs or drawings.

A System of Oyster Culture on Floating Shellfish Parks, by M. Nikolic and I. Stojnic, GFCM, Studies and Reviews No. 18, 17 pp., illus., processed, GFCM Secretariat, Food and Agriculture Organization of the

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United Nations, Viale delle Terme di Caracalla, Rome, Italy, March 1962. An account of the ecological conditions and historical data on the development of shellfish culture in Limski Fjord located in Istria, Yugoslavia. Describes equipment used, rearing-places, and the old and new systems of oyster culture pointing out the advantages of the latter.

PILCHARDS:

The Pilchard of South West Africa (SARDINOPS OCELLATA)-Age Studies and Age Composition of SARDINOPS OCELLATA in the Commercial Catches, 1952-1958, and a New Method for the Determination of the Age of SARDINOPS OCELLATA, by O. Nawratil, Investigational Report No. 2, 43 pp., illus., printed, Administration of South West Africa, Marine Research Laboratory, Windhoek, South-West Africa.

POLAND:

"Les Peches Polonaises" (The Fisheries of Poland), article, *France Peche*, vol. 7, no. 60, March 1962, pp. 19-21, illus., printed in French, *France Peche*, Boite Postale 179, Lorient (Morbihan), France.

PORTUGAL:

"As Industrias de Conserva e da Pesca e Seus Multiplos Problemas" (The Canning and Fishing Industries and Their Multiple Problems), by Mario de Sousa, article, *Conservas de Peixe*, vol. 16, no. 192, March 1962, pp. 15, 17-18, 32, printed in Portuguese, Sociedade Astoria, Lda., Requeirao dos Anjos, 68, Lisbon, Portugal.

"As Pescarias no Algarve--Subsidios para a sua Historia" (The Fisheries of Algarve--Subsidies in Their History), by Alberto Iria, articles, *Conservas de Peixe*, vol. 16, no. 191, February 1962, pp. 31-33; and vol. 16, no. 192, March 1962, pp. 27-31, printed in Portuguese, Sociedade Astoria, Lda., Requeirao dos Anjos, 68, Lisbon, Portugal.

PRESERVATION:

"La Exportacion Espanola de Conservas y Semiconservas" (Spanish Exportation of Canned and Semi-Preserved Fishery Products), article, *Industria Conservera*, vol. 28, no. 273, March 1962, pp. 62-64, illus., printed in Spanish, Industria Conservera, Calle Marques de Valladares, 41, Vigo, Spain. Presents regulations for canning fishery products for export.

REFRIGERATED TRANSPORTATION:

Proyecto de Tratamiento, Conservacion y Transporte por el Frio, de Pescado y Productos de la Pesca (Project for Treatment, Conservation, and Refrigerated Transportation of Fish and Fishery Products), by Sergio Carvajal M., *Divulgacion Pesquera Cartilla No. 1*, 16 pp., processed in Spanish, Departamento de Pesca y Caza, Ministerio de Agricultura, Direccion de Agricultura y Pesca, Santiago, Chile, January 1962.

REFRIGERATION:

Institut International du Froid (International Institute of Refrigeration), 1961-62 supplement au Bulletin de l'Institut International du Froid, 254 pp., illus., printed in French and English, Institut International du Froid, 177, Boulevard Malesherbes, Paris (17^e), France, 1961. Discusses the meeting

of Commission 7 held at Padua, Italy, from June 1-3, 1961, on Refrigerated Transport by Land. Includes, among others, the following reports: "Chilled-air Distribution in Refrigerated Trailers," by P. R. Achenbach; "Notes on Testing the Insulation of Refrigerated Transport Equipment by the Cooling Method," by F. L. Levy; "Performance Tests of Thermostatic Control, on Iced and Mechanically Refrigerated Rail Cars," by W. H. Redit; "The Transport of Quick-Frozen Foods in Great Britain in Highly Insulated Containers," by T. A. Eames; and "Transport of Foodstuffs Under Controlled Temperature in Rail-Road Trailers in France," by M. Chevallier. Also covers the meeting of Commission 5 held at Budapest, Hungary, from August 23-27, 1961, on Construction of Cold Stores, Quick Freezing, Insulation, Fruit Packing Stations. Includes, among others, the following reports: "Survey of Refrigeration Industries and Plants in Hungary," by P. Robert; "Pre-fabricated Single-Storeyed Cold-Stores," by V. I. Safonov; "Study of a Type of Freezing-Tunnel," by E. Gomez; "Deep-Freezing in Tunnels and Means to Obtain the Most Rapid Results Economically," by G. Ganger; "Practical Results of Quick-Freezing in Tunnels," by A. Lagoutte and J. Dalas; "Appreciation of the Quality of Frozen Products," by G. Perticara; "The Importance of Equilibrium Relative Humidity in the Cold Storage of Foodstuffs," by G. Torok; "Thermal Insulating Materials Used in the Construction of Cold-Stores," by N. T. Kudryashov; "Some Applications of Polystyrene for the Insulation of Cold-Stores," by J. Pau; "Insulation of Cold-Stores with Single Layer of Expanded Polystyrene," by J. Toledano; and "Insulation of Cold Rooms--New Insulation Materials and New Insulating Processes in Cold-Stores," by Ch. Fontanel.

RESEARCH VESSEL:

"Design of our New Research Vessel," by Jonathan Lieby, article, *Oceanus*, vol. 8, no. 4, June 1962, pp. 2-13, illus., printed, The Woods Hole Oceanographic Institution, Woods Hole, Mass. Describes the new oceanographic research ship now under construction by the Woods Hole Oceanographic Institution which will be the first major vessel designed and constructed for oceanographic service by a private laboratory in the United States since the 142 ft. ketch "Atlantis" in 1931. It has been designed to do effective all-weather oceanographic research from the fringe ice to the tropics and will be able to accommodate more than one scientific discipline on a given cruise. Detailed diagrams of the vessel are included.

SALMON:

"Nekotorye Dannye o Biologii i Promysle Lososiei v Tikhom Okeane" (Some Data on the Biology and Fishing of Salmon in the Pacific), by P. A. Dvinnin, article, *Rybnoe Khoziaistvo*, vol. 35, no. 12, 1959, pp. 7-13, illus., printed in Russian, VNIRO Glavniroekhta, pri Gosplanie SSSR, Moscow, U.S.S.R.

Pacific Salmon, OTS 60-51139, 288 pp., illus., printed, \$3. The Israel Program for Scientific Translations, 1961. (Available from The Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.) Contains translations of selected articles from various Soviet periodicals on Pacific salmon. The following articles are included: "Adaptive Features of Young Pacific Salmon," by V. V. Abramov;

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"Migrations and Morphometrical Characteristics of the West Sakhalin Pink Salmon," by P. A. Dvinin;
 "The Type of Dynamics of Stocks and the Character of Spawning of the Chum and the Pink Salmon in the Amur River," by G. V. Nikol'skii; "Morphological Differences Between the Summer and the Autumn Chum Salmon," by L. D. Grigo; "One of the Factors of Prespawning Mortality of Pink Salmon in Rivers," by A. P. Makeeva; "Histological Study of Gonads of the Pink Salmon and the Summer Chum," by S. A. Ivanova; "Ecological and Morphological Characteristics of the Development of the Amur Autumn Chum Salmon," by N. N. Disler; "Pattern of Development of Summer Chum, Masu, and Pink Salmon," by S. G. Soin; "High-Seas Salmon Fisheries in the North Pacific," by P. A. Moiseev; "On the Artificial Raising of the Water Level in the Spawning Grounds of Far Eastern Salmon," by I. S. Vasil'ev; "Condition of Stocks of the Amur Salmon and Causes of the Fluctuations in Their Abundance," by A. G. Smirnov; "Changes in Chemical Composition of the Body of Red (Sockeye) Salmon," by I. V. Kizevvetter; "Data on the Biology of the Amur Chum Salmon," by E. A. Lovetskaya; "Some Problems of the Biology and Population Dynamics of Pink Salmon," by A. G. Kaganovskii; "Results of Tagging Pacific Salmon in the Gulf of Kamchatka," by K. A. Lyamin; "Food of Pink Salmon at the End of Marine Stage of Migration," by N. F. Pushkareva; "Changes in the Blood Composition of Salmon During the Spawning Migration," by N. M. Lysaya; "Food of Pacific Salmon in Kamchatka Waters," by A. I. Synkova; "Morphology and Rate of Embryonic Development of Pacific Salmon," by M. Ya. Ievleva; "The Osmoregulatory Ability of Young Autumn Chum Salmon Migrating Downstream," by V. Ya. Levanidov; "Physical and Mechanical Properties of Pink Salmon," by L. M. Men'shutina; "Data on the Biology of Young Silver Salmon During the Marine Period of Live," by I. A. Piskunov; "Food of Downstream Migrant Young Summer Chum Salmon and Pink Salmon in the Amur Tributaries," by V. Ya. Levanidov and I. M. Levanidova.

"Serological Differentiation of Populations of Sockeye Salmon, *Onchorhynchus nerka*," by G. J. Ridgway, J. E. Cushing, and G. L. Durall, article, *Bulletin, International North Pacific Fisheries Commission*, no. 3, 1961, pp. 5-10, illus., printed, International North Pacific Fisheries Commission, 6640 NW, Marine Dr., Vancouver 8, B. C., Canada.

"Some Problems in the Marking of Salmonids," by Donald H. Fry, article, *Pacific Marine Fisheries Commission Bulletin*, no. 5, 1961, pp. 77-83, illus., printed, Pacific Marine Fisheries Commission, 741 State Office Bldg., 1400 SW, 5th Ave., Portland 1, Oregon.

"Survival and Behavior of Sockeye Salmon Fry Migrating into Brooks Lake, Alaska," by Wilbur L. Hartman, Charles W. Strickland, and David T. Hoopes, article, *Transactions of the American Fisheries Society*, vol. 91, no. 2, April 1962, pp. 133-139, illus., printed, Secretary, American Fisheries Society, P. O. Box 483, McLean, Va.

SALTED FISH:

"Salted and Dried Fish. III--Washing of Used Salt," by M. K. Rowan, article, *Annual Report, Fishing Industry Research Institute*, vol. 13, 1960, pp. 12-

13, printed, University of Cape Town, Rondebosch, C. P., South Africa.

SARDINES:

Biología y Tecnología de las Sardinas Cubanas. I--HARENGULA PENSACOLAE CUBANA Rivas y HARENGULA HUMERALIS (Cuvier) (Biology and Technology of the Cuban Sardines. I--*Harengula pensacolae cubana Rivas and Harengula humeralis (Cuvier)*), by Jose A. Suarez Caabro, Pedro Pablo Duarte Bello, and Julia Alvarez Reguera, no. 19, 87 pp., illus., printed in Spanish, Instituto Cubano de Investigaciones Tecnológicas, Apartado 4026, Via Blanca y Carretera Central, Havana, Cuba, December 1961.

Fishery Biology of the Sardine, SARDINOPS MELANOSTICTA (T. & S.) in the Waters Around Japan, Bulletin No. 9, 227 pp., illus., printed in Japanese, Japanese Fisheries Agency, Japanese Sea Regional Fisheries Research Laboratory, Niigata, Japan, 1961.

"Refrigeration et Pre-Conservation des Sardines a Bord du Bateau de Peche" (Chilling of Sardines in Refrigerated Seawater on Fishing Boats), by T. Le Berre, article, *Science et Peche*, no. 91, March 1961, 5 pp., printed in French, L'Institut Scientifique et Technique des Peches Maritimes, 59 Ave. Raymond-Poincare, Paris 16^e, France.

SEAWEED:

Annual Report for 1961, 21 pp., printed, Institute of Seaweed Research, Inveresk, Midlothian, Scotland. Discusses developments in the Scottish and foreign seaweed byproducts industry during 1961, and the Institute's information and technical assistance services. Also discusses production of alginates from seaweed, use of seaweed meal in animal feedstuffs, and development of fertilizers from seaweed. Includes results of investigations on algal polysaccharides, biochemical studies on seaweeds, nitrogenous constituents of marine algae, chemical composition of marine micro-algae, and a list of publications on seaweed published during 1961.

SHARKS:

"Wanted: Shark Hunters!" by James Wiles, article, *Sea Frontiers*, vol. 8, no. 2, May 1962, pp. 84-93, illus., printed, Marine Laboratory, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla. No method for controlling sharks has yet provided complete protection from them or had long-lasting effects. Dyes, air-bubble shields, electronic fields, and off-shore nets are all defensive measures that have been taken. This article discusses the approach of turning defense into offense by seeking methods to eliminate or greatly reduce local shark populations by means of fishing programs. The author feels that through intensive systematic fishing, sharks not only can be captured and destroyed, but also can be made available to scientists for important studies.

SHELLS:

"Water Bottoms Bonanza," by McFadden Duffy, article, *Louisiana Conservationist*, vol. 14, no. 4, April 1962, pp. 21-24, illus., printed, Louisiana Wild Life and Fisheries Commission, Wild Life & Fisheries Bldg., 400 Royal St., New Orleans, La. A brief description of the operations of the Louisiana shell industry and the industrial uses of shells in

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petroleum, chemicals, Portland cement, lime, chicken feed, concrete masonry units, railroad ballast, as well as all types of base construction for road work, stabilization of bases for air fields, runways, in addition to use in asphalt or plant mix. Shell "fines" are also used in the manufacture of roofing. Dredging of shells, and operation of industries using shells, are multi-million dollar activities in Louisiana. Obtaining shells for industry and the transportation to processing plants offers employment to several thousand people in Louisiana. Processing plants in the State employ additional thousands of persons.

SHRIMP:

"A Cooperative Study of Shrimp and Incidental Fish Catches Taken in Shrimp Fishing Gear in California and Oregon, 1958," by Alfred R. Morgan and Doyle E. Gates, article, Pacific Marine Fisheries Commission Bulletin, no. 5, 1961, pp. 85-106, illus., printed. Pacific Marine Fisheries Commission, 741 State Office Bldg., 1400 SW. 5th Ave., Portland 1, Oreg.

SMALL BUSINESS MANAGEMENT:

Building Sales to Younger Customers, Management Aids No. 80, by S. E. Mahle, 4 pp., printed. Small Business Administration, Washington 25, D. C. This leaflet tells how to build sales to younger customers. It emphasizes the younger group because cultivation of these consumers can mean three things. First, some small marketers can increase their present sales by selling directly to teenagers. Second, other small marketers can increase their sales through the influence that teenagers exert on the family's spending. And third, in some cases, small marketers can build loyalty that will mean increased future sales--sales when these boys and girls grow into the young adult group.

Measuring Your Growth Pattern, Management Aids, No. 141, by Joseph Mullen, 4 pp., printed. Small Business Administration, Washington 25, D. C. Describes methods by which businessmen may measure their growth pattern such as sales growth, production efficiency, rate of return on invested capital, customer turnover, new product development, and personnel growth.

A Survey of Federal Government Publications of Interest to Small Business, 71 pp., printed, 30 cents. Small Business Administration, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Contains information about publications of interest to small business owners. Some of the material listed outlines the help available from Federal agencies. Other publications listed explain, in non-technical language, the laws which the agencies enforce, and still others present statistical data useful in marketing or specialized information pertinent to particular industries or trades. Most of the publications included were published within the last two years and are all readily available to the small business owner-manager.

SMOKED FISH:

Selected Publications Concerning Smoked Fish, Circular No. 22, 5 pp., processed. Fisheries Research Board of Canada, Technological Station, Vancouver, B. C., Canada, May 1958.

SOUTH AFRICA:

Die sardyn van Suidwes-Afrika (SARDINOPS OCELLATA) (The Sardine of Southwest-Africa--Sardinops ocellata), by O. Nawratil, Research Report No. 2, 39 pp., illus., printed in Afrikaans. Administrasie van Suidwes-Afrika, Marine-Navorsingslaboratorium, Cape Town, South Africa Republic.

SOUTH PACIFIC:

Identifications of Fish Collections from Kapingamarangi, Eastern Caroline Ids. Haluk, Western Caroline Islands, Raroia, Tuamotu Archipelago, by Robert R. Rofen, AD-272 133, 118 pp., illus., printed, \$10.10. Pacific Science Board, National Research Council, Washington, D. C., Dec. 1961. (For sale by the HQ Armed Services Technical Information Agency, Arlington Hall Station, Arlington 12, Va.)

SOUTH WEST AFRICA:

"The Fishing Industry at Walvis Bay," article, The South African Shipping News and Fishing Industry Review, vol. 17, no. 1, January 1962, pp. 53-109, illus., printed, single copy 40 cents. Odhams Press, South Africa, P. O. Box 2598, Cape Town, South Africa Republic. Describes the growth and present healthy state of the fishing industry of South-West Africa's main seaport, Walvis Bay. Devotes a special article to each of the six pilchard processing factories.

SPAWNING:

Spawning Seasons and Growth of the Goby, *Gobiosoma robustum* (Pisces: Gobiidae), in the Tampa Bay Area, by Victor G. Springer and Andrew J. McErlean, Contribution No. 56, 10 pp., illus., printed. (Reprinted from Tulane Studies in Zoology, vol. 9, no. 2, November 10, 1961, pp. 87-98.) Florida State Board of Conservation Marine Laboratory, St. Petersburg, Fla.

SPINY LOBSTERS:

"La Pesca Industrial de la Langosta en Cuba" (Commercial Fishing for Spiny Lobsters in Cuba), by F. de T., article, Puntal, vol. 9, no. 95, February 1962, pp. 12-13, illus., printed in Spanish, 12 pesetas (20 U. S. cents). Puntal, Ramon y Cajal 3, Apartado 316, Alicante, Spain.

SPORT FISH:

Northern Fishes (With Special Reference to the Upper Mississippi Valley), by Samuel Eddy and Thaddeus Surber, 267 pp., illus., printed. The University of Minnesota Press, Minneapolis, Minnesota, 1943.

STICKWATER:

Evaporadores de Agua de Cola (Stickwater Evaporators), by Peter C. J. Molteno, Divulgacion Pesquera Cartilla No. 2, 12 pp., illus., processed in Spanish. Departamento de Pesca y Caza, Ministerio de Agricultura, Direccion de Agricultura y Pesca, Santiago, Chile.

SWORDFISH:

The Swordfish (*Xiphias gladius* L.), Its Life-History and Economic Importance in the Northwest Atlantic, by S. N. Tibbo, L. R. Day, and W. F. Doucet, Bulletin No. 130, 53 pp., illus., printed, 75 Canadian cents. Fisheries Research Board of Canada, Ottawa, Canada, 1961. (Available from the Queen's Printer, Ottawa, Canada.) A general account is

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given of the life-history of swordfish and the development of a fishery for swordfish in the north-west Atlantic. Special attention is given to the Canadian catch which has increased spectacularly in the last decade from about 2 million pounds in 1949 to nearly 7 million pounds in 1959. The increase is associated with a change in the nature of the fishery from a small boat, inshore operation to the use of long liners and dragnets that can operate offshore and over a wide area. The prospects for continued expansion of this important industry are discussed.

TAIWAN:

Taiwan Fisheries Yearbook 1961 Edition, 194 pp., illus., printed in Chinese and English. Department of Agriculture and Forestry, Provincial Government of Taiwan, Taipei, Taiwan, August 1961. Contains statistical tables showing fishermen's organizations and membership, fishermen, status of fishing vessels, status of ice making and cold-storage industries, fisheries production, and quantity of supply and sale of fishery products and their average value at principal fish markets. Also includes data on processed marine products, fish culture area, production of fish fries, number of casualties of fishermen, losses and damage to fishing vessels and gear, fishing activity at principal fishing harbors by type of craft, foreign trade in fishery products, and related information. Most data are for 1960.

TARIFFS AND TRADE:

Operation of the Trade Agreements Program, 13th Report--July 1959-June 1960, TC Publication 51, 255 pp., processed, United States Tariff Commission, Washington 25, D. C., 1962. During the period July 1959-June 1960, the U. S. had trade agreements obligations in force with 43 countries. Of these, 35 countries were contracting parties to the General Agreement on Tariffs and Trade, and 8 were countries with which the United States had bilateral trade agreements. The United States participated in limited trade-agreement negotiations under the General Agreement during this period with Cuba, Belgium, Denmark, West Germany, Japan, the Netherlands, Sweden, the United Kingdom, and Canada. The report describes these negotiations and, for those that were completed, analyzes the changes that they made in the schedules of concessions of the respective countries. Also covers other important developments including the major developments relating to the general provisions and administration of the General Agreement; the actions of the United States relating to its trade agreements program; and the major commercial policy developments in countries with which the United States has trade agreements.

TEREDO BORER:

The General Biology of Tereido (Final Report 1954-1960), by Charles E. Lane, 11 pp., processed, Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla. Presents a narrative account of the research project concerned with tereidine borers--the principal findings and their significance. The objectives of the investigation were to define as broadly as possible the principal features of the life history and definitive physiology of the tereidine borers. The results and conclusions derived from these studies

are included in the papers listed in the section entitled "Publications."

TRADE LISTS:

The Bureau of International Business Operations, U. S. Department of Commerce has published the following mimeographed trade lists. Copies may be obtained by firms in the United States from the Commercial Intelligence Division, Office of Trade Promotion, Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C., or from Department of Commerce field offices at \$1 each.

Canneries and Frozen Foods--Producers and Exporters--Costa Rica, 5 pp. (April 1962). Lists the names and addresses, size of firms, and types of products handled by each firm. Also contains trade and industry data, and a statistical table indicating the average annual imports of foodstuffs (including fish) during the period 1959-61 and the average percentage of the total imported from the United States.

Canneries--The Netherlands, 13 pp. (April 1962). Lists the names and addresses, size of firms, and types of products handled by each firm. Includes fish canneries and exporters. Also covers basic trade and industry data.

Oils (Animal, Fish and Vegetable)--Importers, Dealers, Producers, Refiners, and Exporters, Italy, 20 pp., processed (April 1962). Lists the names and addresses, size of firms, and types of products handled by each firm. Includes firms dealing in fish and whale oils.

TRAWLING:

"Tralernes Fiske i 1960" (Fish Trawling in 1960), article, Fiskets Gang, vol. 48, no. 10, March 1962, pp. 143-149, illus., printed in Norwegian. Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

TRAWL NETS:

"Duchalut de Fond a Grande Ouverture Verticale au Chalut Flottant" (From the Bottom Trawl with Large Vertical Opening to the Midwater Trawl), by C. Nedelec, article, Science et Peche, no. 85, July-August 1961, 13 pp., illus., printed in French. L'Institut Scientifique et Technique des Peches Maritimes, 59 Ave. Raymond-Poincare, Paris 16^e, France.

"On the Fishing Experiments Conducted with 10-ft. Bean-Trawl Net," by S. E. Deshpande, article, Indian Journal of Fisheries, vol. 7, no. 1, 1960, pp. 174-186, illus., printed, Ministry of Food and Agriculture, New Delhi, India.

TUNA:

Catch Variations in the North Pacific Albacore, 2. Variation in the Amount of Recruitment, by Akira Suda, Report No. 59-18552, 1959, 22 pp., printed, microfilm \$2.70, photocopy \$4.80. (Translated from Nankai-ku Suisan Kenkyusho Hokoku, no. 10, 1959, pp. 72-87.) Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C.

On the Migration and the Growth of the Skipjack, KATSUWONUS PELAMIS (Linnaeus) in the Izu and Bonin Sea Areas and the Northeastern Sea Area Along the Pacific Coast of Japan, by Tsuyoshi Kawas-

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aki, Report No. 59-19341, 1959, 34 pp., printed, microfilm \$3.00, photocopy \$6.30. (Translated from Tohoku Kaiku Suisan Kenkyusho Kenkyu Hokoku, no. 4, 1955, pp. 101-119.) Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C.

On the Migration and the Growth of the Skipjack, KATSUWONUS PELAMIS (Linnaeus) in the South-Western Sea Area of Japan, by Tsuyoshi Kawasaki, Report No. 59-19342, 1959, 41 pp., printed, microfilm \$3.00, photocopy \$6.30. (Translated from Tohoku Kaiku Suisan Kenkyusho Kenkyu Hokoku, no. 4, 1955, pp. 83-100.) Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C.

On the Ovaries of the Skipjack, KATSUWONUS PELAMIS (Linnaeus) Captured in the Fishing Grounds Along the Japanese Coast, by Masakazu Yao, Report No. 59-18563, 1959, 15 pp., illus., printed, microfilm \$1.80. (Translated from Tohoku Kaiku Suisan Kenkyusho Kenkyu Hokoku, no. 5, 1955, pp. 43-52.) Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C.

"A Pesca de Atum-Suas Possibilidades em Angola" (Tuna Fishing - Its Possibilities in Angola), by A. de Oliveira Neves, article, Boletim da Pesca, vol. 12, no. 66, 1960, pp. 79-87, printed in Portuguese. Gabinete de Estudos das Pescas, R. S. Bento 644, Lisbon, Portugal.

On the Stomach Contents of the Skipjack, by Hideyuki Hotta and Toru Ogawa, Report No. 59-19338, 1959, 33 pp., printed, microfilm \$3.00, photocopy \$6.30. (Translated from Tohoku Kaiku Suisan Kenkyusho Kenkyu Hokoku, no. 4, 1955, pp. 62-82.) Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C.

Young Tunas Found in Stomach Contents, by Hiroshi Yabe, and others, Report No. 59-18393, 1959, 30 pp., printed, microfilm \$2.70, photocopy \$4.80. (Translated from Nankai-ku Suisan Kenkyusho Hokoku, no. 8, 1958, pp. 31-48.) Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, D. C.

URUGUAY:

Revista del Instituto de Investigaciones Pesqueras (Journal of the Institute of Fisheries Research), vol. 1, no. 1, 1962, illus., printed in Spanish with English summaries, price in Uruguay 40 pesos or US\$3.65, other Western Hemisphere countries and Spain \$5.00, and all other countries \$6.00. Instituto de Investigaciones Pesqueras, Facultad de Veterinaria, Alberto Lasplases, 1550, Montevideo, Uruguay. One article deals with the hydrolysis of whale meat. Another article describes the determination of the salinity through the Mohr-Westphal balance and presents four tables of direct conversion from specific weight to salinity.

U.S.S.R.:

"Perspektivy Razvitiia Sovetskogo Rybolovstva v Vokh Atlantiki" (Prospects of the Development of Soviet Fisheries in the Atlantic Waters), by A. V.

Mikheev, article, Rybnoe Khoziaistvo, vol. 35, no. 11, 1959, pp. 3-6, illus., printed in Russian. VNIRO Glavniproekta, pri Gosplanie, SSSR, Moscow, U.S.S.R.

VESSELS:

"Das Kombinierte Fangschiff" (The Combination Fishing Vessel), by C. Birkhoff, article, Hansa, vol. 97, no. 16/17, 1960, pp. 826-831, illus., printed in German. Schiffahrts-Verlag "Hansa", Hamburg, Germany.

Die nordeuropaischen Seefischereifahrzeuge, ihre Entwicklung und ihre Typen (The Development and Types of Marine Fishing Vessels in Northern Europe), by Gerhard Timmermann, Handbuch der Seefischerei Nordeuropas, vol. 11, no. 4, 1962, 204 pp., illus., printed in German, DM 79.60 (about US\$20.00). E. Schweizerbart'sche Verlagsbuchhandlung (Nägele u. Obermiller), Stuttgart W., German Federal Republic. Contains a short history of ship construction and conditions responsible for the form of the various marine vessels in Northern Europe. Includes data on vessels of Middle-Europe, Scandinavia, and Western Europe, as well as information on vessels needed for whale and seal catches, a listing of types of vessels, and a bibliography. The survey on this subject can only be very general because there isn't sufficient literature available on each individual type of vessel. There were quite a few ships found that date from the days of the Vikings, and there is some historical source material available. Not until the 17th Century, however, do we come across some material describing certain marine vessels. Between the 17th and 19th centuries there were exhaustive books written on the subject, including valuable engravings displaying the various types of vessels. In the 20th century, bulletins of museums contained information on the folklore aspects of marine vessels. Later, when economic and technical considerations came into prominence, more information on the subject could be gathered from technical journals and books.

Proceedings of the International Economic Conference on Small Craft Fisheries and Transportation (May 24, 1960, Hotel Waldorf-Astoria, New York), 24 pp., illus., printed in French and Spanish. Outboard Marine International S. A., P. O. Box 830, Nassau, Bahamas.

VIET-NAM:

Scientific Facilities and Information Services of the Republic of Viet-Nam, by John O. Sutter, Pacific Scientific Information No. 3, 37 pp., illus., printed, 50 cents. The Manager, Pacific Scientific Information Center, Bishop Museum, Honolulu 17, Hawaii, 1961.

VIRGIN ISLANDS:

Charting the Marine Environments of St. John, U. S. Virgin Islands, by Herman Kumpf and Helen Randall, Contribution 348, 8 pp., illus., printed. (Reprinted from Bulletin of Marine Science of the Gulf and Caribbean, vol. 11, no. 4, December 1961, pp. 543-551.) The Marine Laboratory, University of Miami, #1 Rick-enbacker Causeway, Miami, Fla., 1961. By use of the diving sled in conjunction with aerial photos, charting of the marine biotopes of St. John, Virgin Islands, was carried out expediently and accurately. The method of operation of the diving sled is discussed and pos-

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sible application to other phases of aquatic investigation are mentioned. The chart of the marine environments of St. John is figured.

WATER POLLUTION:

Conference on Water Pollution Problems in Europe (Held in Geneva from 22 February to 3 March 1961), vols. I, II, and III, United Nations Publications, sales number 61.II E/Mim. 24, 626 pp., processed, \$5.00, Sales Section, European Office of the United Nations, Palais des Nations, Geneva, Switzerland, 1961. The secretariat of the United Nations Economic Commission for Europe has assembled here the documents which were submitted to the Conference on Water Pollution Problems in Europe. The documents are assembled in three volumes and have been grouped according to the major items discussed at the Conference. Volume I contains documents dealing with the most urgent water pollution problems requiring attention; Volume II incorporates the papers concerned with administrative and legal aspects of water pollution control; and Volume III those which discuss the economic aspects of water pollution and the possibilities for international action through establishment of international water pollution control bodies and international exchanges of information. The report of the Conference and the list of participants are also included in Volume III.

WEATHER CHARTS:

Coastal Warning Facilities Chart, Cape Hatteras, N. C., to Brunswick, Ga., 1962, 2 pp., processed, 10 cents. Weather Bureau, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This chart shows stations displaying small craft, gale, whole gale, and hurricane warnings, explanation of warning displays, and schedules of AM and FM radio and TV stations that broadcast weather forecasts and warnings.

Coastal Warning Facilities Chart, Montauk Point, N. Y., to Manasquan, N. J., 1962, 2 pp., processed, 10 cents. Weather Bureau, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This chart shows stations displaying small craft, gale, whole gale, and hurricane warnings, explanation of warning displays, and schedules of AM and FM radio and TV stations that broadcast weather forecasts and warnings.

Coastal Warning Facilities Chart, 1962, Point Conception, Calif., to Mexican Border, 20M, 2 pp., processed, 10 cents, 1962. Weather Bureau, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Chart shows stations displaying small craft, storm, and hurricane warnings and explanations and schedules of AM and FM radio and TV stations that broadcast weather forecasts and warnings.

WHALES:

"Reproduction, Growth and Age of Southern Fin Whales," by R. M. Laws, article, *Discovery*, vol. 31, pp. 327-486, illus., printed, Jarrold and Sons Ltd., Norwich, England.

WHALING:

"Australia's 1961 Whaling Season," article, *Fisheries Newsletter*, vol. 21, no. 2, February 1962, pp. 15, 26, illus., printed, Commonwealth Director of Fisheries, Department of Primary Industry, Canberra, Australia. A summary of the whale catch from the five Australian shore stations during 1961. Includes data on location of catch; species, length, sex and maturity of whales caught; oil and byproducts yield; the Antarctic catch; and summary of the results of whaling from Australian stations since 1957.

"Pelagic Whaling in the Antarctic Season 1961/62," article, *Norsk Hvalfangst-Tidende*, vol. 51, no. 4, April 1962, pp. 156, 159-161, printed in Norwegian and English. *Norsk Hvalfangst-Tidende*, Sandefjord, Norway. Discusses details of the catch and vessels participating in the 1961/62 Antarctic whaling season under the flags of Norway, Japan, the United Kingdom, U.S.S.R., and the Netherlands. Includes statistics showing the weekly harvest of blue-whale units with comparative data for the two previous seasons; average number of blue-whale units per catcher day by countries in the last four seasons; last season's catch and production of whale products together with the average catch per catcher day; production of whale and sperm oil of the individual expeditions for the last three seasons; and other pertinent data for the whaling fleets of the five nations.

WORLD TRADE:

The following World Trade Information Service Reports, published by the Bureau of Foreign Commerce, U. S. Department of Commerce, Washington, D. C., are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at 10 cents a copy.

Licensing and Exchange Controls, Republic of South Africa, Operations Report No. 62-12, WTIS Part 2, 12 pp., printed, March 1962.

YUGOSLAVIA:

Informativni bilten (Information Bulletin), printed monthly in Serbo-Croatian. Institut za Tehnologiju Ribe, P.O.B. 110, Zadar, Yugoslavia. Contains, among others, the following articles:

_____, No. 1, January 1961. "Dark Spots in Fish Meat," by E. Androvic; and "On Retort Venting during Sterilization," by H. Lisac.

_____, No. 2, February 1961. "The Advantage and Quality of Canned Sardines Produced by IMC Machine," by N. Kucic; and "The Comparative Production of Solid Packs and Tunnyfish with Vegetable," by M. Lete.

_____, No. 3, March 1961. "Proposed Changes in Existing Standards for Fishery Products," by H. Lisac.

_____, No. 4, April 1961. "Some Problems of Soldering Fluxes," by K. Sepic.

_____, No. 5, May 1961. "Regular Repairs in Fish Canning Plants," by V. Perovic; and "The Big-

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gest Export of Fish Products in 1960," by D. Djurdjevic.

_____, No. 6, June 1961. "Seaming Machine Adjustment," by K. Sepic.

_____, No. 7, July 1961. "The Use of Juvipur Piping in Fish Canning Plant," by V. Perovic.

_____, No. 8, August 1961. "Electrical Installation in Fish Canning Plant," by V. Perovic.

_____, No. 9, September 1961. "Fisheries of Cambodia," by K. Sepic.

_____, No. 10, October 1961. "A Brief Resume on Fish Handling and Processing in Egypt," by M. Aref; and "Fisheries of Cambodia--II," by K. Sepic.

_____, No. 11, November 1961. "The Use of Decolage / Cans for Canned Fish," by V. Zaputovic and S. Mramor; "Soldered Joints on Tin-Plate Cans," by K. Sepic; "Soldering Fluxes and Their Influence to the Can Content," by S. Banjad; and "Quality Control of Tin Plate Cans," by D. Franolic.

_____, No. 12, December 1961. "Aluminum, its Characteristics and Application in Food Canning Industry," by V. Perovic; "Notes about Fishing Industry in Japan," by S. Bacic; "Cans Volume and Weight of Content," by S. Banjad; and "The Causes of Loosened Seams Formation on Square Cans during Sterilization," by H. Lisac.

1 Can with soldered lid or cover.

Listings under Yugoslavia supplied by K. Sepic.



TROUT PLANTED BY PLANE

In the Mount Rainier National Park stocking program, 53,300 fingerling rainbow trout (weighing a total of 65 pounds) were stocked from the air in eight lakes, according to a report from the Portland Regional Office of the U. S. Bureau of Sport Fisheries and Wildlife. The fish, which were provided by Quilcene National Fish Hatchery, were placed in plastic bags, oxygen added, and the bags carried in cardboard cartons stacked in the plane. A private flying plane was engaged to do the job. The 3-hour job cost \$90 for plane rental, a big saving over costs for pack stock and packers. The fish were released in excellent condition.

Editorial Assistant--Ruth V. Keefe

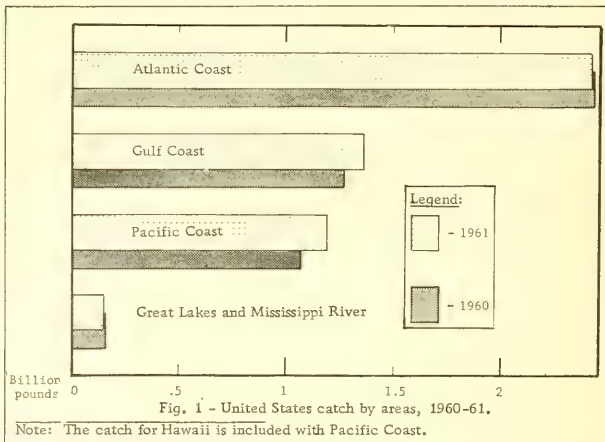
Compositors--Jean Zalevsky, Alma Greene, Helen Paretti, and Raie Carron

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Cover and p. 72--Arnie J. Suomela, American Embassy, Tokyo, Japan; pp. 6 & 7--Maine Development Commission, Augusta, Maine; pp. 28, 30 (fig. 2--left column), and 31--F. B. Sanford & C. F. Lee; p. 30 (fig. 2--right column), Fishery Technological Laboratory, E. Boston, Mass.; p. 33--R. K. Brigham, Woods Hole, Mass.; p. 45--Andrew L. Pinto; p. 60--Press Bureau, Danish Foreign Ministry; p. 84--Walter H. Stolting.

FISHERIES OF THE UNITED STATES, 1961

C. F. S. No. 2900, Fisheries of the United States, 1961 (A Preliminary Review), shows the landings of fish and shellfish in the United States by species, states, and areas; disposition of the landings; monthly catch and utilization; domestic catch from waters off the United States and on the high seas off foreign coasts; quantity of gear used and catch by gear; value of the landings by species; employment, fishing craft, and establishments engaged in the fisheries; per capita consumption; data on manufactured fishery products; value of industry and capital investments; foreign trade; available supplies of certain fishery products; and data on world fisheries. Included are a number of graphs on various phases of the fisheries.



Per capita consumption of fish in the United States increased to 10.9 pounds in 1961, a half pound more than in the previous year. This increase was divided equally between "fresh and frozen" and canned items.

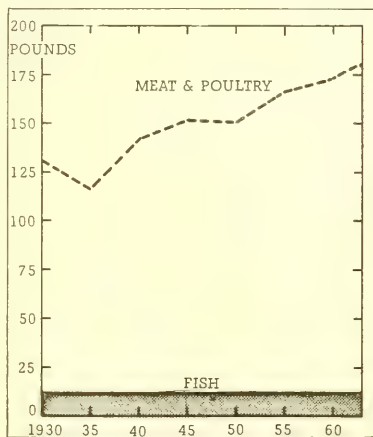


Fig. 1 - United States per capita consumption.

The supply of domestically-produced fresh and frozen products declined substantially, the report shows, even though the annual harvest was the Nation's second largest--5.2 billion pounds. Imports were up sharply due to increased receipts of ground-fish fillets and blocks, and shrimp; however, both edible and nonedible imports established records.

The total amount paid to United States fishermen and vessel owners amounted to \$358 million--nearly \$4 million more than in 1960, but \$15 million less than the record \$373 million paid in 1958. The average price per pound was 6.94 cents, a low one due to the record catch (2.3 billion pounds) of low-priced menhaden.

San Pedro, Calif., was the leading United States fishing port in 1961 with respect to both volume and value--416 million pounds with an ex-vessel value to the fishermen of \$36 million.

The figures on the 1960 world catch--a record 83.2 billion pounds--recently compiled by the Food and Agriculture Organization of the United Nations are included in the report. Five countries accounted for well over 50 percent of the total catch--Japan (16.4 percent), China (Mainland) (13.3 percent), Peru (9.4 percent), U.S.S.R. (8.1 percent), and the United States (7.5 percent).

Copies of C. F. S. 2900 are available free from the Office of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.





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